amateur radio

Vol. 35, No. 10
OCTOBER
1967

25c

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CITIZENS BAND

"Communicator" Model WT400, 4 transistors, 27.240 Mc. Crystal locked transmitter, 50 mW. output. Range approx. 2 miles open country. **Price $35.00 a pair.**

"Lamie" Model FRT907, 9 transistors, superheterodyne, crystal locked receiver and transmitter, 100 mW. output. 27.240 Mc., P.M.G. approved. Range approx. 5 miles in open country. **Price $59.50 a pair.**

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Spare Aerials for above sets, **$3.80 each.** Other Spares readily available.

2 Watt and **5 Watt Transceivers** are available also. Price on application.

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Type	Size	Frequency C/S	Maximum Input	Price
Twin Cone Types:				
6A7	6 in.	60-16,000	5 watts	**$5.50**
8A7	8 in.	50-16,000	8 watts	**$7.50**
12A9	12 in.	30-13,000	20 watts	**$18.75**
Coaxial Type with "Free Edge" bass cone and horn tweeter				
8CX50	8 in.	30-22,000	15 watts	**$23.75**
10CX50	10 in.	25-22,000	20 watts	**$36.00**
12TX50	12 in.	18-22,000	25 watts	**$62.50**
Single Cone "Free Edge" type:				
5A50	5 in.	50-15,000	8 watts	**$15.00**
Professional Series:				
H50 Horn Tweet.		2,000-20,000	15 watts	**$11.10**
6M50 6½" Sp'ker		200-6,000	25 watts	**$21.00**
8L50 8 in. Woofer		37-4,000	15 watts	**$28.25**
10L50 10 in. Woofer		25-3,000	20 watts	**$41.00**
12L50 12 in. Woofer		17-2,500	30 watts	**$64.00**

Please Note.—A7 and A9 types are available in either 8 or 16 ohm Voice Coil. A50, CX50, TX50 and Proessional types, 16 ohms only.

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5 in. Tweeter, 4,000-18,000 c/s, 15 watts r.m.s., 15 ohm V.C. **$4.30**

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Twin Cone, Elliptical, 85-10,000 c/s, 5 watts r.m.s., 9 in. x 6 in., 7 watts peak power, 3.5 or 15 ohm V.C. impedance **$6.55**

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"AMATEUR RADIO"

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★

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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES
VK2WI, Sundays, 1100 hrs. E.S.T.

VICTORIA
VK3WI, Sundays, 1030 hrs. E.S.T.
1825 Kc. a.m. 144.5 Mc. a.m.
3600 Kc. s.s.b. 145.854 Mc. f.m.
7146 Kc. a.m. 432.5 Mc. a.m.
53.032 Mc. a.m.

QUEENSLAND
VK4WI, Sundays, 0900 hrs. E.S.T.
3580 Kc. 53.995 Mc.
7146 Kc. 144.36 Mc.
14.342 Mc.

SOUTH AUSTRALIA
VK5WI, Sundays, 0900 hrs. C.S.T.
3.5, 14, 52 and 144 Mc. bands

WESTERN AUSTRALIA
VK6WI, Sundays,

TASMANIA
VK7WI, Sundays, 1000 hrs. E.S.T.
3672 Kc., and re-transmitted by representative stations on—
7146 Kc. 144.1 Mc.
53.032 Mc. 432.6 Mc.

THE NEW "HANDBOOK"

FEDERAL Executive takes great pleasure in announcing that the new "Handbook" for the guidance of operators in the Amateur Service is now ready for printing.

Behind this deceptively simple statement lies nearly two years of negotiation and discussion between the Institute and the Postmaster General's Department and it is the purpose of this, and subsequent, notes to inform Institute members of the background and results of these negotiations—negotiations which affect all Amateurs in Australia, no matter whether or not they are members of the Institute.

At the Federal Convention held in Melbourne at Easter 1965 several subjects were raised which involved representation to the Department. They included such things as allowable sideband power, t.v.i. and portable operation. It became the job of Federal Executive to pursue these points with the Department and present the Institute point of view.

Accordingly a working party was formed consisting of Messrs. Hull, Williams, Connelley, Owen and Hepburn and for over three months this group met at least weekly and often more frequently. Every aspect of the Handbook was examined in the light of Institute policy and finally a submission was prepared which gave the Institute point of view on such diverse subjects as the status of the Amateur Service, t.v.i., age limits, acceptable sideband power limits, portable and mobile operation, modes of transmission, authority for the erection of masts and many other matters.

As a result of this submission, a series of meetings was arranged with officers of the Department.

At the first of these meetings—chaired by Mr. Eric Neilson (Asst. Director General—Telecommunications) those present were Mr. C. Carrol (Controller—Radio Branch), Mr. K. Buckley (P.M.G.) and Messrs. Williams, Owen and Hepburn of the Institute.

The points raised in the Institute's submission (and many others) were examined in detail and it soon became clear to both parties that a complete revision of the Handbook was necessary. As a result of a series of minor alterations over quite a long period the Handbook had become rather unwieldy and was often either obscure in its meaning or, worse, inconsistent within itself. Furthermore, in some places it did not accurately reflect the Regulations on which it was based and which it purported to explain and expand.

It was therefore agreed that both the Institute and the Department would, separately, prepare drafts of a new Handbook and compare these drafts at a later date.

This exacting task, which was to occupy nearly all the spare time of the Executive working party for the next four months, was assisted by an analysis of the appropriate legislation (not only of Australia, but also of Britain and the United States) prepared by the Department.

At the second meeting held in November 1965, to review progress, it was immediately apparent that both the Institute and the Department were in complete accord on the philosophy behind the Handbook.

Some minor matters of wording remained to be resolved but both parties were obviously trying to express the same thoughts. With this heartening background, work continued through the Christmas break and a third meeting was held in January 1966, when the now completed drafts were again compared and moulded into a complete whole. A few "toughies"—notably that relating to t.v.i.—remained to be settled but in the main the new Handbook had taken shape. The Department undertook to steer the necessary regulatory changes through the appropriate legal channels and also to produce the final draft of the Handbook.

Due to the low priority accorded these regulatory changes, it was over a year before the Department was in a position to inform the Institute that the Handbook was cleared for printing.

FEDERAL COMMENT

As an interim measure, the situation with regard to the sideband power limit and the preferred method of measurement was clarified by a letter from Mr. Carrol which was printed in the December 1966 issue of "A.R." This letter stated that Australian Amateurs would be allowed a peak **output** of 400 watts on s.s.b. and also detailed the method of measurement to be used.

At the last meeting—held on 24th August, 1967—the final draft of the Handbook was checked and was equally satisfactory to both the Institute and the Department. Since the printing of the new Handbook will take some time, the Institute has permission to print in "A.R." those parts of the new Handbook of immediate interest to Amateurs. The list is a long one and over the next few months it is the intention of Federal Executive to cover them in some detail giving both the changes themselves and the reasons for them.

Briefly, however, some of the changes (other than the s.s.b. power limit) are:

- Reduction in age limit to 15 years for would-be Amateurs.
- Five days /P operation for all classes of licence without prior departmental approval.
- Recognition of the Amateur Service as such.
- Reduction in log keeping requirements.
- Clarification of c.w. examination marking standards.
- Reduction of theory examinations to twice yearly.
- Wider use of different modes of transmission allowed.
- Freedom of choice for frequency measuring equipment.
- Prior D.C.A. authorisation of antenna masts no longer a condition of issuing a licence.

The above list is not exhaustive, but serves only to indicate the way in which a wide variety of subjects have been examined and made to reflect present day conditions. Neither does such a list indicate the depth in which each subject was examined.

Between now and the time the new Handbook is actually available on the bookstalls, the Institute has the undertaking of the Central Administration of the Department that the provisions of the Handbook, as they express the policies of the Department, will be conveyed to the Radio Superintendent in each State.

Over and above the changes that have occurred in the rules governing the Amateur Service, there has been another gain which must be to the benefit of the Australian Amateur. That change is one for the better in the matter of relationship between the Department and the Institute. At the present time this relationship is extremely good and based on a mutual respect and understanding that has not hitherto existed.

Provided always that the Institute acts in a responsible and logical manner in seeking advantages for its members, then it will not seek in vain.

—HAROLD L. HEPBURN, VK3AFQ,
Federal Vice-President, W.I.A.

TRANSISTORISED REGULATED POWER SUPPLY

K. A. KIMBERLEY, VK2PY*

THE power supply described in my article "'The Thing'—Transistorised" ("A.R." August 1967) has been in regular use at VK2PY. During this time certain modifications have been incorporated into it and hence its usefulness has become even greater.

My power transformer, type ST3894, is rated at 0.5 amp. instead of 2.0 amp., as in the original Mullard circuit, hence the overload series resistor required alteration. R4 was increased to 20 ohms 40 watt. A 12 volt 100 mA. lamp (B.P.O. type No. 2) connected across R4 serves to indicate when an excessive load is being drawn from the supply. This modification does not seem to alter the regulation characteristics at load currents below about 250 mA., however the regulation becomes progressively worse at higher loads.

Notwithstanding this slight degrading of its performance, the supply is still quite usable up to a load current of 500 mA. I know of five supplies having been built and all are giving satisfactory results. However, in some cases, the maximum output voltage has been somewhat lower than the design figure. This is caused by the reference zener diode (S) being lower than 15 volts.

Zener diodes are usually supplied with a nominal tolerance of either 5% or 10%. Naturally the 5% ones are somewhat more expensive. Also due to the sorting methods used, at the factory, the odds are that the resulting diode supplied will be on the low side. However, an increase in the reference voltage is obtainable simply by adding ordinary silicon diodes in series with the zener. Provided that the correct polarity is observed, each silicon diode will give about 0.75 volts extra.

D7 is used as a protective device and is not really necessary, hence this diode could be used as described in the preceding paragraph.

* 5 Don Street, Newtown, N.S.W., 2042.

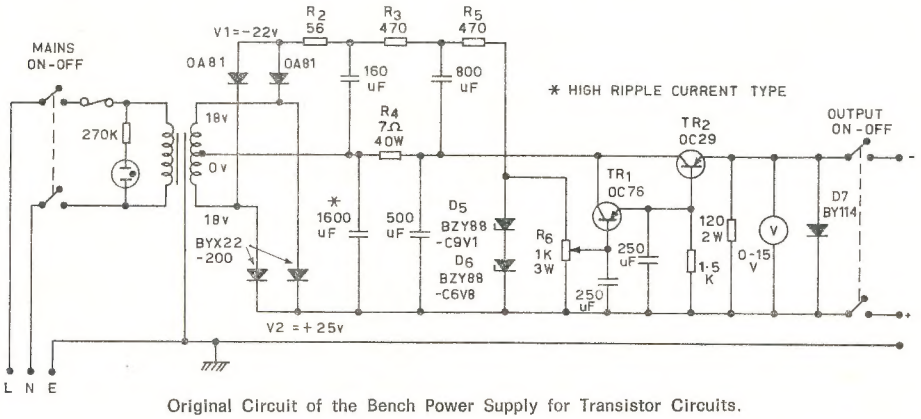
● Readers are referred to the August 1967 issue of "A.R." page 9 for information on the original transistorised regulated power supply described in the author's article "'The Thing'—Transistorised". In this issue he submits details of modifications to the power supply which will be of interest to readers. Also a brief note re transistor testing, using the supply, is included.

METERING

The fixed range voltmeter has been changed to a multirange function:—

Position	1	0-10 volts
,,	2	0-20 volts
,,	3	0-500 mA.
,,	4	0-50 mA.
,,	5	0-10 mA.

The best voltage regulation is obtained when the meter range switch is in one of the voltage positions. This removes the meter shunts from circuit, thus keeping the internal impedance of the supply to a minimum. The values shown in the diagram were calculated on the basis of a 1 mA. 100 ohm (i.e. 100 mV.) meter. Different meters may be used providing the shunts and multipliers are altered accordingly. My shunts were wound with the appropriate gauge solderable resistance wire (Eureka, etc.), and adjusted to the correct value.



Original Circuit of the Bench Power Supply for Transistor Circuits.

CURRENT RANGE ADJUSTMENT

Connect the station multimeter and a 100 ohm resistor in series across the power supply. Keep the voltage output down to minimum and switch the meter range switch to the 10 mA. range.

At this stage it is wise to keep the standard multimeter, etc., on a higher range. Now carefully wind up the voltage until the meter under test (M.U.T.) shows full scale and note the actual reading on the "standard".

Return voltage to zero and replace the 100 ohm resistor with one of about 10 ohms and repeat the above for both the 50 mA. and 500 mA. ranges. If the readings obtained indicate that no great errors have been made a start can now be made on the actual adjustments.

Set both the M.U.T. and the "standard" to the 10 mA. position and carefully turn up the voltage control until one of the meters reads 10.0 mA. If the "standard" reads full scale before the M.U.T., the resistance of the shunt is too low and conversely if the M.U.T. shows full scale first the shunt is high.

A shunt which is no lower than about 10% may be increased to the correct value by unwinding same and very carefully stretching it. A rewind job will be needed when the above procedure fails or if the shunt is more than 10% out of tolerance. A high shunt may be unwound to give the correct value or another resistor connected across it until the M.U.T. gives the same readings as the standard. The next two ranges are adjusted in the same manner.

Warning: Always switch the supply off whilst making adjustments, otherwise you are likely to wrap the meter pointer around the stop. The shunts should be cooled down with a "metho" soaked rag to prevent erroneous results caused by the "thermo couple" effect.

VOLTAGE RANGE ADJUSTMENTS

The purchase of two only 10K ohms 1% "high stab." resistors is the easiest way of obtaining satisfactory voltmeter results. The internal resistance of the meter adds to multiplier resistance. In my case, the meter resistance was 100 ohms and represents an additional 1% (on the 10 volt range). Hence the actual resistance tolerance becomes minus zero plus 2%. A further possible error of ±1%, due to the calibration of the meter itself, should also be taken into account. At the worst, the overall error will be minus 1% plus 3% of f.s.d., and should not worry the average Amateur. The 20 volt range will be slightly better as the meter resistance now represents an error of only 0.5%.

(Continued on Page 18)

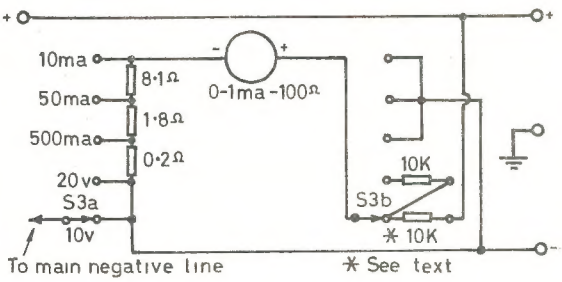


FIG. 1. MODIFIED METER CIRCUIT.

WARBURTON FRANKI

NEWMARKET PACKAGED CIRCUIT AMPLIFIERS

SPECIFICATION DETAILS:

Data	PC1	PC2	PC3	PC4	PC5	PC7	PC9
Power Output mW.	150	400	400	400	3W.	800	Pre-Amp.
Input Imped. ohms	1.5K	1K	2.5K	220K	1.5K	1.5K	1M
Outp. Imped. ohms	40	15	15	15	3	8	600
Supply Volt. —volts ..	9	9	9	9	12	9	9
Typical Distortion % ..	2	3	3	3	3	3	1
Frequency response	300-15K	200-12K	200-12K	200-12K	50-12K	50-12K	20-20K
Overall Dimensions All ¾" high.	2x1	2½x1½	2½x1½	2½x1½	5½x1¾	3x1¾	2x1
PRICE	**$5.00**	**$6.27**	**$6.27**	**$6.27**	**$12.47**	**$7.53**	**$4.50**

Plus Sales Tax 12½% and Postage.

SUGGESTED APPLICATIONS:

PC1—Audio Amplifier. Intercom. Amplifier. Lab. Instr. Amplifier.
PC2—Modulator Drive Stage. Church Hearing Aid Amplifier. Tape Replay Amplifier. Mine Communication Amp. Telemetry Audio Amp.
PC3—D.C. Relay Driver. Sound-level Meter Amp. Low Power Battery Stereo. Heating and Ventilating Control Amp.
PC4—G.P. Amp. and Driver's Office Dictating Machines. Listening Booth Amps.
PC5—Portable Audio Amps. Car Radio Audio Amps. Servo Amplifier. Tape Relay Amp. Automation Drive Amp. Burglar Alarm Amp.
PC7—Tape Language Lab. Telephone Dictating Machine Amps. Control Amp. for Textile Machinery.

● Write or Call for Data Leaflet.

PRINTED CIRCUIT COMPONENTS

COPPER BACKED MATRIX BOARD

Size: 3" x 3" **58c**
6" x 6" **$1.75**
9" x 9" **$3.63**

ALSO PLAIN COPPER BACKED BOARD

Size: 6" x 3" **20c**
6" x 6" **36c**
12" x 3" **36c**
9" x 6" **48c**
12" x 12" **$1.24**

Plus S.T. 12½%. Plus Pack and Post 5c per board.

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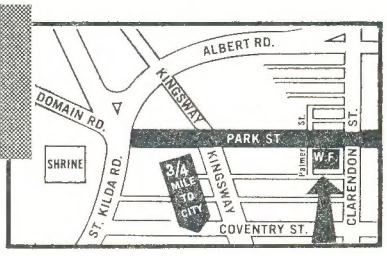

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MODIFICATIONS TO B28/CR100 RECEIVERS

A. M. KEIGHTLEY, VK6XY*

HAVING received my call sign a couple of years ago, I settled down with a B28 and Geloso and 813, to enjoy Amateur Radio to the full. Some six or eight weeks after the first contact I plunged into my first R.D. Contest, which rapidly showed up the short comings of using the B28 in crowded band conditions today.

After some reflection I decided to embark upon a programme of improvement of the monster, with the stipulation that the full coverage features would not be impaired; firstly to retain the ability to check for spurious responses, which were starting to show up in the form of t.v.i. (that is another story) and, secondly, to continue to be used as a general coverage receiver for short wave listening.

I hope the ideas used prove to be of some use to other B28/CR100 users as well as to other receivers.

STABILISING OSCILLATOR

First move was to stabilise the h.f. oscillator, so an OA2 VR tube was fitted in an available corner and function switching arranged so that the h.f.o. ran at all times the receiver was on, even when the function switch was "off". The practice had been to turn this off for transmission as muting had not been arranged at this stage. By now drift with voltage changes had improved greatly, but an annoying feature became evident on s.s.b. signals.

When the line voltage jumped up or down by some 5 volts or more, the receiver drifted up or down, as the case may be, quite slowly over a period of a second or so. Considerable reading and discussion suggested that the culprit was the resistance of the cathode coating changing with the changes in temperature. As the cathode was grounded, I decided to try some external R so fitted up a carbon pot. and discovered that about 220 ohms could be introduced without upsetting oscillation on any band. So a 220 ohms 1 watt was wired in. The previous problem had been reduced to negligible proportions.

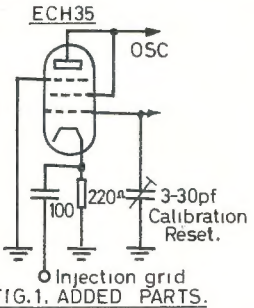

FIG. 1. ADDED PARTS.

A further oscillator problem became noticeable for attention in the form of a considerable pulling on 15 and 10 metres. The receiver has a separate oscillator feeding the grid of the triode section of an ECH35 which now adorned the place of the previous mixer (a 6K8G I think). Reckoning any try was worth while, and not having space for a cathode follower, I tried taking injection voltage from the 220 ohms resistor in the oscillator cathode instead of the previous method. This worked "fine" but calibrations had all jumped up a bit, but nothing a Philips' trimmer did not fix. The internal resistance was only minor compared to external so was "swamped" effectively.

Now sideband signals could be copied on 10 metres with a.g.c. pulling no problem. So on to the next item.

SELECTIVITY

A Collins 455 kc. filter came to hand the hard way, so I looked into the possibility of retaining the present arrangement of bandpass switching with the addition of the mechanical filter, but due to lack of space could not achieve this, so ended up removing the crystal filter and associated coils from the first i.f. and introduced the filter as the only connection between the mixer and 1st i.f., but was not happy with 2.1 kc. on a.m., so some fiddling around produced a very workable arrangement, shown in Fig. 2.

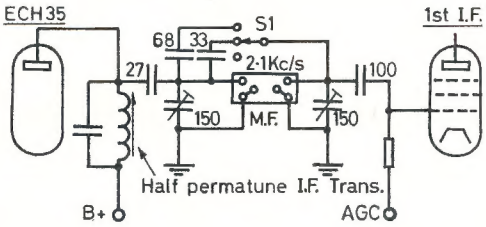

FIG. 2. I.F. SELECTIVITY CONTROL.

The grid resistor of 1st i.f. is 0.1 megohm.

The mixer plate feed was via an old i.f. transformer cut in half and adjusted to the frequency of the filter, then the 150 pF. air trimmer peaked up. The two capacitors of 33 and 68 pF. were then switched across the filter for wider bandpass. 33 pF. gave 3.6 kc. without upsetting the shape factor too much, while 68 pF. is good for broadcast band usage. The switch is the section of the passband switch which brought in the crystal filter.

Now the receiver passband is 8 kc., 3.6 kc., 2.1 kc., 2.1 kc., and 100 c/s. with original audio filter. The second 2.1 kc. position was later used to switch in a bridge T filter, which is introduced between the ECH35 and the filter, and takes care of heterodynes very nicely. Details came from R.S.G.B. Circuits Handbook, ex W.I.A., and uses a 12AX7 in conjunction with the other half of the wrecked i.f. transformer.

By now the receiver was performing quite well, but with an eye to future work on it I decided to make a lot more space available by replacing the large quantity of metal encased, under chassis mounted, 0.1 uF. capacitors which seemed to occupy far too much territory. So out they came, to be replaced by disc ceramics across the valve sockets. This seemed to lift the overall performance, so the old ones must have been overdue for replacement. It is amazing how much extra space became available!

FITTING A VERNIER DIAL

The tuning with the 2.1 kc. filter seemed quite critical so a Jabel 6 : 1 ball bearing vernier was fitted on the front tuning shaft and a small bracket made up to secure it to the front panel below the knobs. This was ¼" wide metal fitted so that it was very close to the tuning knob, to be out of the way of fingers in a hurry.

This made a fantastic difference and really speaks well of the B28 drive mechanism, as no back-lash is evident. These low priced little verniers should not be overlooked for any such application, they do a mighty job.

INCREASED GAIN

By now I was feeling fairly happy with things, but felt that gain could be increased with benefit. After playing around with various configurations, I ended up with an 6EH7 in the 1st r.f. position with a.g.c. on its grid and its own gain control in the cathode. This gain control was placed on the front panel above the present r.f. gain control which controls r.f. and i.f. gain.

EF39 valves were fitted to the 2nd r.f. stage and three i.f. stages without any instability troubles, and gain was well up.

REDUCED MIXER NOISE

There is always a "but" in my "delvings" and this was now internal noise, which was eventually traced to the ECH35. Shorting out the h.f. oscillator and grid one did not change things much, so it left the cathode and grids 2 and 4. After clearing the cathode, I started on grids 2 and 4, put a pot. from this pin to ground and as I wound it around, so the noise went down. Quite a bit of checking ended up with 37 volts on that pin. The mixer noise disappeared and no other problems took its place; signals weak or strong were not upset, so I sneaked quietly onto the next section after taking out the pot. and replacing it with suitable resistors. Probably the high voltage on these electrodes was accelerating electrons to such an extent they bounced off the cathode, creating noise. That's my story and I'm sticking to it!

MUTING RECEIVER

Muting the receiver on transmission came in for discussion and the B28 handbook circuit used without complaint. All i.f. valves and the 2nd r.f. cathode resistors return to a common line and then to the moving arm of a 2K pot. which was modified as in Fig. 3.

* P.O. Box 1, Wickepin, W.A., 6370.

The upper 2K pot. originally had its lower end on ground. By adjusting the extra 2K pot. on transmit, the receiver is very good to monitor my own transmission. A small socket fitted on the rear of the chassis enables the leads to be taken to the transmitter and relay.

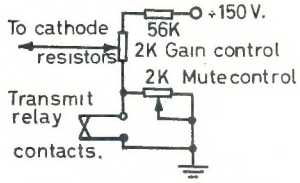

FIG. 3. MUTING CONTROL.

With the present push to talk arrangement in use, the receiver is instantly in the sensitive receiving condition with no delay that some muting systems suffer from.

DETECTOR

The detection department came in for the next attack. This had not been changed previously as I could see no easy way of switching from product to a.m. detector within the existing switching facilities.

diode triode can be replaced by it without any problems of trying to find space for an extra valve, and the extra switching required to change from the usual diode detector to product detector. I find it is very desirable to have an a.m. detector available, as there are still quite a few unstable a.m. v.f.o's!

To carry on the idea of reducing loading on the last i.f. transformer, the a.g.c. system was changed. This comprises one section of a triode used as a cathode follower. It gets its energy from last i.f. plate to give even further isolation from the b.f.o., and supplies a germanium diode and a series silicon diode as a gate. This also acts as a voltage doubler to give increased a.g.c. voltage and the circuit arrangement (Fig. 5) gives fast attack and slow decay. The extra time constant capacitor is switched into circuit by the b.f.o. switch.

The OA202 has a very high back resistance so decay time is controlled by the value of 2 meg. resistor. The B28 now has both r.f. and the three i.f. valves on a.g.c. and is able to take care of the strongest signals into this shack. In fact r.f. and i.f. gain controls are run flat out at all times, except on

triode in socket and with gain turned down and no signal, set cathode pot. for zero reading and you are in business. This arrangement gives a cut-off at about 4 volts a.g.c. fed to the half 12AT7.

The space for this valve came to hand by throwing the 5Y3G out and putting a pair of silicon diodes, BY100s, under the chassis on a tag strip.

At this stage of development, the receiver is performing very well and seems able to hold its own with most others and better than many, and still retains full coverage. The next project is to complete a stage started quite some two years ago, but shelved, to construct an s.s.b. exciter due to the t.v.i. mentioned earlier. That is to scrap the band 1 which used to tune from 60 to 160 kc. and rewind the coils and bandspread them to cover 500 kc. of some suitable area, either 3.5-4.0 Mc. or 4.5-5.0 Mc., and then some converters to go with it.

This has been a very interesting project so far. It has developed from much rag chewing on 80 metres and quite a bit of experimenting, during which I have learned quite a bit more about receivers and what makes them

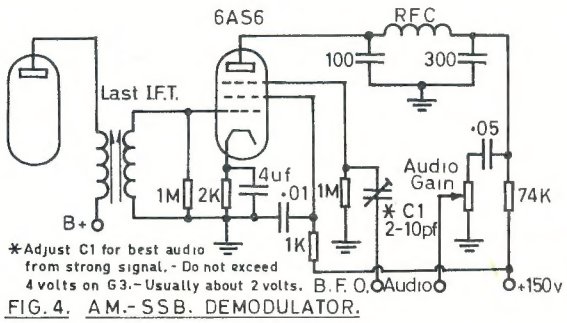

FIG. 4. A.M.-S.S.B. DEMODULATOR.

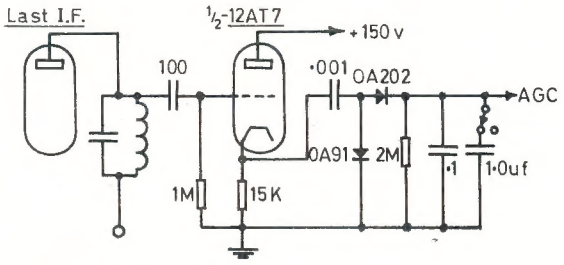

FIG. 5. A.G.C. CIRCUIT.

Note: The OA202 is shown incorrectly. It should have been drawn in the reverse direction.

A circuit published in the VK6 Bulletin was tried and proved to be ideal. This was developed by the Philco people and after some component changes (Fig. 4) worked better than expected. The original circuit showed how to obtain a.g.c. and S meter from it. Do not persist with these as other circuits work much better for these.

The 6AS6 has an odd grid 3, which has control over the electron stream similar to a grid 1, and its operation as a suppressor is not impaired by being 1 meg. above ground. Feeding the last i.f. into the high impedance of grid 1 instead of the usual diode detector, reduces the loading on its winding and it improves the selectivity in receivers where this is a problem and naturally is able to develop a greater voltage.

Detection of a.m. signals takes place in the grid-cathode area and is amplified in the grid-anode circuit.

To receive c.w. or s.s.b. signals only entails energising the b.f.o. Very efficient mixing takes place in the suppressor-anode area, and a further benefit appears. Grid 2 so effectively prevents b.f.o. signal getting back to grid 1 that a.g.c. action is not affected by b.f.o. voltage at any time.

The 6AS6 is quite able to drive a 6V6G to much greater sound level than I can stand! So this means the usual

80 metres. The overall arrangement maintains between 1 and 1½ volts of r.f. on grid 1 of the 6AS6 on all signals above about S2 signals. The a.g.c. worked so smoothly I decided to put in an S meter, shown in Fig. 6.

S METER

This circuit has an advantage over many others in that it is impossible to pin the meter once the pots. have been set.

For any other receivers, select a valve which will have a cut-off voltage equal to the a.g.c. voltage of that developed by that rock-crushing signal in the next block. With the valve out of the socket, set the 3K pot. for full scale deflection, then replace the pot. with a fixed resistor of equal value. Replace

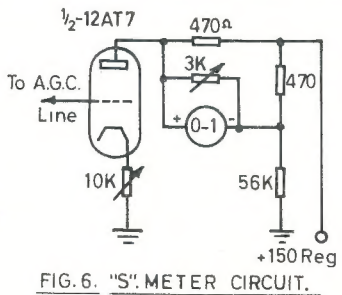

FIG. 6. "S" METER CIRCUIT.

tick. In writing this I have tried to keep it as simple as possible, and each section separate, so that if any of the ideas appeal, they may encourage someone else to grab a soldering iron and get into it. I am sure you will have quite a lot of fun and the end result will be very pleasing.

☆

PROVISIONAL SUNSPOT NUMBERS FOR APRIL 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	105	16	32
2	79	17	42
3	54	18	58
4	52	19	56
5	62	20	44
6	63	21	60
7	79	22	76
8	104	23	94
9	67	24	74
10	62	25	78
11	62	26	66
12	51	27	55
13	63	28	76
14	48	29	79
15	51	30	66

Mean equals 65.3.

Smoothed Mean for October 1966: 66.8.

Predictions of the smoothed monthly sunspot numbers for the coming six months:—

May 84, June 87, July 91, August 94, September 98, October 101.

—M. Waldmeier,
Eidg. Sternwarte Zurich, Switzerland.

SIDEBAND

Sub-Editor: PHIL WILLIAMS, VK5NN, 37 Winns Rd., Coromandel Valley, 5051

SIDEBAND FOR CONTEST

This year the R.D. Contest has come and gone, and it can be said quite safely that the sidebanders dominated the Contest. In previous years the really high scorers used high power on a.m. and "plonked" their carriers on whatever they wished to work, or alternatively just sat with a monumental signal and waited for all and sundry to call in and be worked.

1967 appears to have been the year of the transceivers, and there is no doubt they were effective in getting high scores in a short time. Those of us who are not young still need our sleep and enjoy meals in the dining room, even during Contests. I will not cross swords with the c.w. Contest men, as c.w. is quite obviously the most effective DX Contest medium, especially if you are DX.

"HOW CAN I GET ON SIDEBAND?"

Since the R.D. Contest I have been approached by all and sundry with the question "How can I get on sideband?" There are several questions which must be asked of the enquirer, such as "Do you wish to build or buy? What have you built in the past? How much can you spend?"

Those who wish to buy are usually told to visit the shack of some acquaintance, ask questions, operate the gear and then read all the equipment reviews to see which gear will provide all the necessary features they need. An example of this is "I won't have vox at any price, but I must be able to get a 500 cycle bandpass filter for c.w. contest work—so whom do you know with such equipment that I can see, and will assure me that 500 cycles is not too narrow as I'm not really sure." Customers such as this are usually easy to satisfy (with advice, at any rate).

WHICH EXCITER TO BUILD?

And now for the builders—they want to get on sideband using the junk box wherever possible, for which I don't blame them. I usually advise them to try the 9 megacycle phasing generator plus 5.0 to 5.5 megacycle v.f.o., with the possibility of adding crystal oscillators for bands other than 20 and 80 metres. This is a well tried recipe. and if you wish, later you can spend 30 to 40 dollars on a crystal filter—brand of your choice. There are numerous designs published but a well tried one is described in the A.R.R.L's Single Sideband Handbooks. The fourth edition has one on p. 71 by John Isaacs, W6PZV. It uses the American McCoy filter with upper and lower sideband carrier crystals. There are others, of course, but these 3 kc. wide filters give very good quality sideband signals.

In the same Handbook is the well known "Sideband Package" design by W6TEU, first described as long ago as 1958 in June "QST". This uses a crystal filter on 455 Kc. or thereabouts, using the surplus FT241 crystals. These are not as plentiful as they were 10 years ago, and remaining stocks have been well sifted through for goodies and many doubtfuls are now being sold. The price of mechanical filters has recently been reduced, so I recommend one be substituted for the crystal filter in the "Package". This could save hours of fiddling with surplus crystals. I have a personal dislike of mechanical filters and the sort of voice quality they produce, but this does not mean that they will not produce an effective signal with the other sideband well suppressed. One mistake people usually make is to place the carrier too high up the skirt of the filter. For the normal voice (male) and a 2.1 kc. wide mechanical filter, the carrier crystal should be set so that the "audio" for the flat-topped passband is from about 500 cycles to 2600 cycles per second.

Again, it is possible to adapt the "Package" design to use a phasing type generator at 2250 kc. This may be done as shown on page 80 of the Sideband Handbook by K4EEU, and page 87 by K9YHT.

If you have ever built an Amateur band receiver, with its mixers, r.f., stages, i.f's and oscillators (h.f. and b.f.), then you should have no difficulty with any of the above designs. As with the receiver, where the high i.f. will give less problems with images, the exciter generating the sideband at a high frequency of say 5.5 or 9.0 megacycles. will be simple to construct and align. When you use 455 kc. you need to go to double or even triple conversion to get to the desired band and so a few double-tuned circuits will be needed along the way to get rid of unwanted images of the generated signal.

The same rules generally apply to the selection of oscillator frequencies. The levels of the oscillators for mixing s.s.b. signals are usually about 10 times as high as the sideband, so that more care is needed to ensure that their levels are not any greater than essential, and their harmonics do not fall too close to the required output band. Remember the old Irish rule that no harmonic less than the fifth should fall within 20% of the final output frequency. If they do, then you need to "trap" them out, or go to bandpass circuits—and this is enough to scare anybody off.

It will be noted that all of the exciters described use the trusty old 6146s, either one or two in the final stage. These tubes are generally easier to get going than the t.v. line output tubes such as the 6DQ5. The 6146 is better screened internally and gives less distortion products. With fixed screen voltage of about 210 and 700-800 volts on the plate, about 45 volts of bias is needed to hold the quiescent plate current to about 25 mA. per tube. I have found the 6146 almost indestructible in this service. Should your experience with 6146s in class C with grid leak bias have been as disastrous as mine (globules of molten grids inside the tube), then take fresh heart, because once neutralised they are tame to tune, but very hot performers.

If you build a phasing version, don't forget to study that classical article in the same Handbook, originally written for November 1956 "QST" by Bob Ehrlich, W2NJR (then W0JSM), "How to adjust phasing-type s.s.b. exciters". It is still as applicable now as when it was written.

When tackling s.s.b. construction for the first time, allow yourself plenty of room on a large chassis and build in the shielding early in the project. I suggest you re-read page 15 of September 1965 "Amateur Radio" for tips on laying out the exciter chassis.

SEVERAL COMMON QUESTIONS

The first evergreen question is: "Well, I have operated c.w. for over 40 years but I'm 'danged' if I can get the hang of those pi-network things. Can I stick to link coupling in the s.s.b. final?"

The answer is that it is possible to use link coupling, especially if you are prepared to stick to plug-in coils and variable links so that the loading on the final can be adjusted for optimum. But in these days of shielded finals (to reduce t.v.i. and r.i.) and rapid band switching, the pi-network gives a better means of band changing with one tapped coil and a large broadcast three-gang condenser for a loading control.

But don't expect too much impedance matching range with a simple switched coil. They are usually designed for a nominal 50 or 70 ohms output impedance—all boxed up, and an aerial matching and tuning box is used to bring the aerial back to an impedance of this value.

The second harmonic of an 80 metre s.s.b. signal on 40 metres (or just outside of 40 metres) sounds awful, so if you use the pi-network for convenience, then use an aerial tuner to present the correct load to your final—and reduce your harmonic output at the same time.

And the second question concerns peak ratings of final amplifier tubes and went like this:—

"I had a Heathkit DX100 with a pair of 6146s which took about 140 watts input unmodulated in class C, and on modulation this was 560 watts peak input power. Why can't I run the same peak input on sideband?"

Now, you wouldn't operate these tubes at such ratings in a modulator, would you? Just imagine a class C modulator—no I can't, because it would sound terrible, but class B should be better. Looking at the class AB1 and AB2 ratings in the Handbook shows that AB1 gives 120 watts output and AB2 132 watts (peak) output, the latter

(Continued on Page 17)

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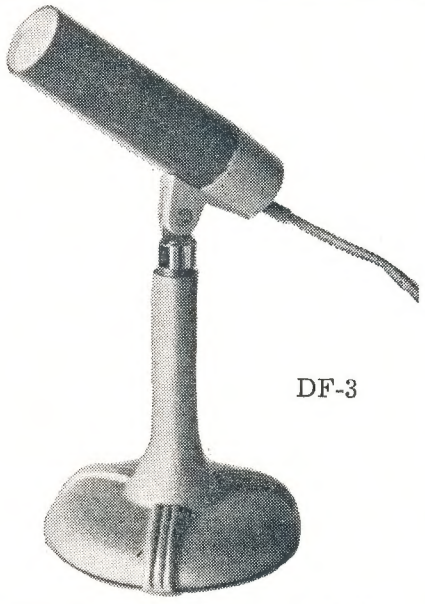

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OF JAMBOREES AND CUBS AND US . . .

A. J. C. THOMPSON, VK4AT*

WHAT a headache to co-ordinate and launch such a scheme! Yet we see more co-operative effort being put into it each year. In VK4 land, at this particular QTH, the two Amateur Radio stations to be used arrive complete with aerials, gear and rostered operators. They set up in opposite ends of this huge solid timbered Scout-hut and test their gear simultaneously on different bands.

Along comes the Great Day, the Scouts, the Radio Gang and QRM. One transmitter tries to outcrash the QRM on 40 metres while the other finds the long distance 20 metre band to its liking. New Zealand responds and after a few reciprocating exchanges and sundry adjustments the meters suddenly come good and we are off to a good start.

The s.w.r. meter in the aerial circuit registers a tale of woe, so Barrie looks at his 72 ohm coax, with a critical eye and decides on 300 ohms. He mentally pictures the probable activities of his household, then estimates the chances of successfully swiping a hunk off their t.v. 300-ohm lead-in.

No. 2 operator, placidly waiting for detailed instruction on how to handle this (to him) strange rig, is suddenly bundled into the operator's chair, shown the off-on switch, told to turn that knob for gain and chase him with that dial if he moves off frequency. The ZL is loud and clear so the greetings of the Scouts in their queer jargon is bandied back and forth. A brisk bargaining on the exchange of badges ensues and then we are off with him and on to Adelaide. Barrie returns in a cloud of dust but with no visible sign of pursuit. He heaves the purloined 300-ohm lead-in through the window and takes over.

The transmitter "loads-up" and all is well. Tension is off for the relieving operators and a quick cup of tea indicated, but they have with them that niggling thought: Now why should a purloined lead-in have jagged ends when the swiper thereof had a perfectly good pair of side cutters in his pocket? It could quite reasonably be assumed that Barrie's "good deed of the day" was to be postponed until tomorrow. His grateful family would then appreciate the quick fixing of the t.v. that had so suddenly gone on the blink. But back to work with a background of rattling cups, voices and the harsh blare of the other transmitter valiantly striving on 40 metres.

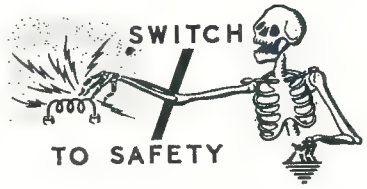
Yallourn in VK3 land is soon busy, bragging about their big hole in the ground and how you can stand on the top and see ant-like movements way down at the bottom. We know the answer to that one. They are ants! Not to be outdone and put to shame when the tall ones are being put over, we have a word with our Scouts and out goes the tale of the shoppers at the one-mile in the old days who, on very wet days, could go down one mine and come out of another mine almost on the main street. Adelaide seems to be popular. Some sort of a corroboree due to be held there soon, we gather, when the Scouts speak some English.

So here is Adelaide and a heterodyne. Comes a request to shift up 5 Kc. Now how far is 5 Kc. on a strange rig? We give that one up and tell him to go up and call us from there. We have a stab at 5 Kc., gently rocking the dial in wider and wider sweeps then shoot right up the band. We locate his familiar voice just putting it over to us about three times as far up as we expected. Either this rig has a super bandspread or else he just kept going until he found a clear spot to his liking.

We compare his six Scouts with our 20, then discover our 20 are now 40. Now, shall we put them through like sheep at shearing time or trust to his being generous and having a long session? We tell him we have droves of Cubs and Brownies, then call in the eager ones to speak their piece while we cast an appraising eye over their leader. Will she give them confidence by speaking or do they give her confidence? She looks efficient and confident so in she comes and all is well.

Those expectant little faces are not all to be satisfied, even though we coax and cajole the more timid. There are going to be some tears shed over this by the less fortunate and those that we miss. Things are quiet for awhile as a VK2 comes in, but he has only Girl Guides. Our Scouts are not shy and ask for an exchange of badges. A pause and then "they haven't any". We are shocked! How have they acquired the "brush-off" technique at such an early age? A little thought, then we visualise anxious mothers in the background shepherding their chicks. We warn our Scouts not to use slang and make a note on the pad to "bung on" the charm during the next over.

The speaker drones on and we have time to ponder over the symmetrical attractiveness of these Brownies and Girl Guides in their uniforms, without any eye-catching colors. Like the Scouts themselves, their neat appearance must have been evolved by trial and error over many years. Here we have healthy tradition in the making with a whole cross-section of our youthful community taking no part in either wanton destruction or the cult of ugliness. It makes us wonder if the so called leaders of youth have very willing followers.



But back to work as the speaker suddenly cuts out. A flick of the dial and a glance at the meter puts the trouble at the other end. Probably nervous little fingers have pushed the mike switch over. Back he comes with a rush to murmur 73 to us all and he is off.

It is CQ for us now in the hope of DX, but the answer comes from Narrandera. We puzzle over a town in Victoria having a 2 call sign, but when he says he is about half-way between Melbourne and Sydney we decide it must be on the border. Some of our small fry at the back insist on it being in the Riverina but we ignore them. We make a note on the pad to bring an atlas next time. It would help on this job if the operator was a school teacher and a trained detective with a couple of years spent on psychology and a few months in a charm school.

And thinking of detectives reminds us of Barrie and that severed lead-in. He must have had some doubts about his family waiting for him to fix that t.v. In that case the local t.v. troubleshooter might even now be trying to join two jagged ends that dangle 20 feet apart. After sundry tuggings he would have to give visual proof to a very sceptical family that such a state existed. His troubles wouldn't end there either. He would be expected to explain how it went and where it is now.

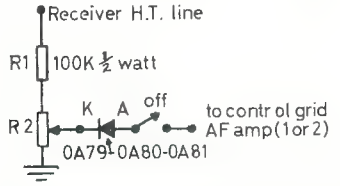
But we have our own troubles, too. We just took a little peek up the band a bit, confident that the transmitter was sitting on the frequency. When too late we remembered that in these silly transceivers the transmitter follows the receiver around like a faithful pup. Now we have lost our station and can't find it. All of our observant off-siders know just where we were sitting so we soon are back on the frequency with the loss of much dignity.

More trouble now, this time from a Victorian. We never even heard of his town but on enquiring we learn that he comes from the Glenrowan district. Wow we do know our history even if we are a bit weak on geography. We ask if he is the son of Ned Kelly. He is indignant! He says he is not the **son**, he is the **father**. A heated argument flares up at this end. Did he mean that he was the father of Ned Kelly's son or just the father of Ned Kelly? Now we Queenslanders can hold our own when the talk is of big holes in the ground, but when the bragging is about their famous relatives, then we must admit to being properly licked. We hand over to our successors after warning them to beware of these Victorians. They can put it all over us when it comes to telling tall yarns.

* Skyrings Creek, Pomona, Qld.

A SIMPLE AND EFFECTIVE NOISE LIMITER

The following circuit was found to be a simple and effective noise limiter. The circuit itself is simple and only requires a few components and is easily incorporated into most existing receivers.



The circuit is actually only a gated clipper, by varying the positive voltage on the cathode of a diode we control the voltage at which the diode will conduct (minimum voltage at which the diode is gated on), thereby limiting the maximum positive voltage swing on the anode.

The values used in the circuit were selected from the junk box and can be varied to suit the builder, but R1 should be kept a high value to (a) limit the current through the pot, thereby limiting the power dissipated in it, and (b) as the voltage on the grid is only small, we only require a maximum voltage of about 10-20 across the pot.

With the values shown in the circuit and a h.t. of 200 volts, the current flowing through the circuit is only 1.8 mA. (approx.). This means the voltage across the pot. is about 19 volts, this value gave ample control over the diode. also this meant the power dissipated in the pot. was well within its tolerance (much less than ½ watt). The pot. has a switch (s.p.s.t.) so that the limiter can be switched in and out.

The semiconductor diode used was a normal small signal diode of the germanium type.

The circuit was tested in several receivers and worked effectively in all of them and made unreadable signals readable without attenuating the required signal greatly.

—Jim Jones, VK2ZEZ (ex VK3ZEW)

— . . . —

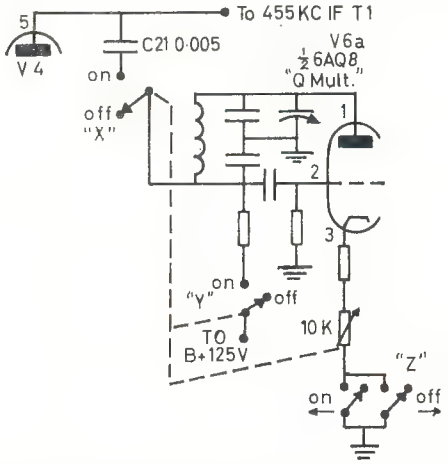
MODIFIED "Q" MULTIPLIER IN HE80 RECEIVER

As originally wired, switches X and Y (see diagram) are as indicated and switch assembly Z does not exist, i.e. the 10K potentiometer is connected direct to earth at its bottom end. When the X and Y ganged switches are closed to connect the "Q" multiplier, the whole of the "Q" multiplier is placed in parallel across the primary of 455 Kc. i.f. transformer T1. This detunes this i.f. to the extent that the **gain** which the "Q" multiplier will supply is all "used up" in making up for the loss caused by the detuning of T1.

So, simply disconnect X and Y from their present positions and bridge these connections permanently. Rewire X and Y into the circuit shown between the 10K pot. and earth as at Z. Realign the i.f. transformer T1. There should be sufficient slug adjustment available.

(Note that in the HE30 receiver this modification is not successful because the i.f. cannot be peaked after the modification.)

If difficulty is experienced in aligning the i.f. of the HE80 a reduction in the value of C21 by a small amount may help.



This modification gives up to 5 S points gain in signal strength when the "Q" multiplier is "on" as compared to its "on" position previously. The increase in "Q" is still quite effective. Try it and see. There are no new components required, just a little soldering and wire.

Paul Rodukoff, WIA-L4017

SIDEBAND ELECTRONICS ENGINEERING

ALEX OUTTRIM will take care of your needs during my absence overseas and continue to keep stocks of the following equipment:

★ **GALAXY V. Mk. 2 all-band, 10-80 metres, SSB Transceivers. $550.**

★ **SWAN SW350 and SW500 de-luxe all-band SSB Transceivers.**

★ **SWAN SW250 6 metre SSB Transceivers. $455.**

★ **HEATH HW32-A 20 mx Transceiver Kits. $180.**

★ **GONSET Sidewinder 2 metre SSB/AM Transceivers. $400.**

★ **240V. AC heavy-duty Power Supply-Speaker Units for Transceivers. $70.**

★ **12V. DC-DC imported Mobile Power Supplies for Transceivers. $90.**

★ **HEATH HA14 all-band 10-80 metre Linear Amplifier and AC Supply Kits. $225.**

★ **HY-GAIN TH3JR Junior and TH6DX Senior Tri-Band Beams. $100 and $210.**

★ **CDR heavy duty Ham-M Rotators. $180.**

★ **NEWTRONICS 4-BTV 10-80 metre all-band self-supporting, Base Station Verticals. $70.**

★ **COAX-BALUNS for Dipoles and G5RV's. $10.**

★ **EIMAC 3-400Z Zero-Bias Linear Amplifier Tubes and Tube Sockets. $42.50.**

★ **SETS OF TEN FT243 Crystals, 5205-5235-5245-5285 and 5335 Kc. with etching salt and filter construction hints. $5.**

Also, perfect used Galaxy III. 20/40/80 Metre Transceivers. $275.

Hope to be back early 1968 with lots of new ideas and goodies from America, the U.K., the Continent and JAPAN . . . ARIE BLES

SIDEBAND ELECTRONICS ENGINEERING

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ROSS HULL MEMORIAL VHF/UHF CONTEST, 1967-8

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual Contest which is held to perpetuate the memory of Ross Hull whose interest in v.h.f./u.h.f. did much to advance the art.

A Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories, inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed certificate.

OBJECTS

Australian Amateurs will endeavour to contact as many other Amateurs in Australia and Overseas under the following conditions.

DATE OF CONTEST

From 0001 hours, E.A.T., 9th December, 1967, to 2359 hours E.A.T., 14th January, 1968.

DURATION

Any seven calendar days within the dates mentioned above, not necessarily consecutive. These periods are to be at the operator's convenience. A calendar day is from 0001 hours E.A.T. to 2359 hours E.A.T.

RULES

1. There are two divisions, one of 48 hours duration, and one for seven days. In the seven-day division, there are three sections:—
   (a) Transmitting, Open.
   (b) Transmitting, Phone.
   (c) Receiving, Open.

2. All Australian and Overseas Amateurs may enter for the Contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f./u.h.f. bands may be used, but no cross-band operating is permitted. Operators are cautioned against operating transmitting equipment on more than one frequency at a time, particularly when passing cyphers. Cross-band operation to assist contest working is prohibited.

Such operation will be grounds for disqualification. Cross mode contacts will be permitted.

4. Amateurs may enter for any of the transmitting sections. The seven-day winner is not eligible for the 48-hour award.

5. Only one contact per band per station is allowed each calendar day.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences.

8. **Cyphers**: Before points may be claimed for a contact, serial numbers must be exchanged. The serial numbers of five or six figures will be made up of the RS (telephony) or RST (c.w.) report plus three figures, commencing in the range 001 to 999, for the first contact, and will then increase in value by one for each successive contact. When a contestant reaches 999 he will then commence again with 001.

9. **Entries must** be set out as shown in the example, using only one side of the paper. Entries must be post-marked not later than 12th February, 1968, and clearly marked "Ross Hull Contest" and addressed to Federal Contest Manager, Box N1002, G.P.O., Perth, W.A., 6001.

10. **Scoring** for all sections will be based on the attached table. Distances must be shown in the log entry as shown in the example. Failure to make this entry will invalidate the particular claim. Some typical distances are given in the attached table.

11. **Logs**: All logs shall be set out as in the example and in addition will carry a summary sheet showing the following information:

Name .....Call Sign .....
Address .....Division .....
.....Claimed Score .....

SCORING TABLE

Distance in Miles	52 Mc.	144 Mc.	432 Mc.	576 Mc. Higher	
Up to 25 Miles	1	1	2	2	20
26 to 50 ,,	1	1	10	10	50
51 to 100 ,,	2	5	25	30	100
101 to 200 ,,	5	10	50	60	200
201 to 300 ,,	15	15	75	85	250
301 to 500 ,,	10	20	100	125	300
501 to 1050 ,,	5	25	200	200	350
1051 to 1500 ,,	10	50	250	250	400
1501 to 2500 ,,	20	100	300	300	450
2501 to 3500 ,,	35	200	400	400	500
3501 to 5000 ,,	50	300	450	450	550
5001 and over	100	400	500	500	600

Operating Dates.....(7 cal. days)
Highest Score over a 48-hour period was .....points.
Operating period:
from.....hrs. E.A.T. ...../...../6 ...
to .....hrs. E.A.T. ...../...../6 ..

Declaration: I hereby certify that I have operated in accordance with the conditions of my licence and abided by the Rules of the Contest.

Signed. ....
Date . . . .

12. Entrants not abiding by the Rules of this Contest will be disqualified.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards**: Certificates will be awarded to the winners of each section in each VK and Overseas Call Area. The VK contestant who returns the highest score in the transmitting section and who is a financial member of the W.I.A., will have his name inscribed on the Trophy which will be held by his Division for the prescribed period. A Certificate will be awarded to the contestant who shall not be the Trophy winner, and who returns the highest scoring log covering a period of any 48 consecutive hours.

Also, Certificates will be awarded for operating in the Ross Hull Contest and breaking any Australian v.h.f./u.h.f. distance record.

RECEIVING SECTION

1. Short Wave Listeners in Australia and Overseas may enter for the Contest, but no transmitting station may enter.

2. Contest times and logging of stations on each band are as for the transmitting sections, however there is no 48 hour sub-section.

3. To count for points, logs will take the same form as for transmitting sections, but will omit the serial number received. Logs must show the call sign of the station heard (not the station worked), the serial number sent by it, and the call sign of the station being worked.

Scoring will be on the same basis as for transmitting stations, i.e. on the distance between the Listener's station and the station heard. See the examples given. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day on each band for scoring purposes.

5. **Awards**: Certificates will be awarded to the highest scorer in VK and Overseas countries.

EXAMPLE OF TRANSMITTING LOG (Brisbane Station)

Date/Time E.A.S.T.	Band Mc.	Emission Power	Call Sign	RST/No. Sent	RST/No. Rcvd.	Dist. Miles	Points Claim.
24th Dec. 0100 E.A.S.T.	52	A3(a)	VK7ZAI	59001	59004	1110	10
0110 E.A.S.T.	52	A3(a)	VK4NG	58002	57051	330	10
0230 E.A.S.T.	144	A3	VK5ZK	56003	55043	990	25
0235 E.A.S.T.	144	A3	VK3ZJQ	45004	46021	850	25

EXAMPLE OF RECEIVING LOG (Perth S.w.l.)

Date/Time E.A.S.T.	Band Mc.	Call Heard	RST/No. Sent	Station Called	Dist. Miles	Points Claimed
2nd Jan. 1000 E.A.S.T.	52	VK5ZDX	59221	VK8KK	1330	10
1025 E.A.S.T.	52	VK2ZCF	58195	VK6ZAA	2040	20
1110 E.A.S.T.	432	VK6ZDS/6	57061	VK6LK/6	60	25
3rd Jan. 0500 E.A.S.T.	144	VK5ZHJ	44102	VK6ZCN	1330	50

1967 R.D. Broadcast by Hon. Allen Fairhall, M.P., Minister for Defence

IN countless radio shacks in Australia today, there is a ring around the calendar. For today is Remembrance Day.

May I begin by recalling one little remembered fact. It is that, in the years before World War II., there operated in Australia a Royal Australian Air Force Amateur Radio Reserve. On the declaration of war in September 1939, the first additions to the manpower strength of the Australian fighting forces came from this group of Radio Amateurs. They were to be the first of a long line of Amateurs who gave their services to their country at war.

Some of them even gave their lives. And in Australia we recall their sacrifice in this Annual Remembrance Day Amateur Contest.

Since Amateur Radio contacts make friendships, and develop international understanding, and because in this field lies the greatest possibility for the future of avoiding war, it seems to me that today's Remembrance Day activity and the promotion of contacts between fellow Australians is a fitting way of serving the memory of those Australian Amateurs whose names appear on the Roll of Honour.

And yet their service in the field was not the only service that Amateur Radio operators rendered to Australia at war.

The fact is that World War II. gave birth to much of the electronic technology which now runs our world. In a country which had not previously been deeply involved in the electronic industry, but found itself in wartime need, it was the home-grown skill and experience of Radio Amateurs that largely filled the key roles in laboratories and factories, developing and building the equipment which their fellow Amateurs operated in the field.

Perhaps nothing gives me more pleasure than this opportunity officially to acknowledge, even if belatedly, the magnificent contribution to this country's defence which came from Amateur Radio operators.

It has been my pleasure to be associated with you, officially through Defence and defence production, but even more happily as an active member of the fraternity and if, today, I hold a position of some authority in the Government, it is because my interest in Amateur Radio set me on the high road to that office. But it does permit me to say that the health and growth of Amateur Radio as an advanced technical activity, is of the very greatest value, not only to defence, but to national development, when electronics means so much.

● This is the full text of a special message broadcast throughout Australia on 12th August, 1967, on the Amateur Bands by the Minister for Defence (Mr. Allen Fairhall) on the occasion of the 1967 Remembrance Day Contest conducted annually by the Wireless Institute of Australia.

Mr. Fairhall is a Life Member of the Wireless Institute of Australia and a pioneer of the commercial and amateur broadcasting networks in Australia. Mr. Fairhall operates from Newcastle, N.S.W., on the Amateur call sign of VK2KB.

In France, the government of today operates what might be termed a "national radio school," recruiting to it thousands of technically-minded young men, giving them instruction, supplying them with components for practical instruction, then judging their work. All of this, the promoters say, is to make sure that the electronics industry of that country is not starved of the technical talent it needs.

This is how one modern technologically advanced country values electronic technicians. It could be an example to everyone.

But if we do not have that kind of school, the Amateur Radio could well be a powerful alternative, richly deserving of government encouragement in all of those avenues where government alone can help. Not least of these is in the preservation of Amateur frequency assignments.

It is trite to say that this is the electronic age. But if anybody should be so foolish to regard that as merely another cliche, they need only cast their thoughts over today's activities in travel and transport, in research, design and production, in management, communications and in entertainment. The great common denominator for all of these daily activities is the practical application of electronics.

And to all of this, through his own efforts, the Radio Amateur has an open door. For Amateur Radio is a unique preoccupation. I can't call it a hobby, because it is vastly more than that.

To the technician, amateur or professional, Amateur Radio offers an avenue of scientific study where he can learn by doing. To the more advanced scientist, it offers opportunity to experiment within his resources and to discuss the results of his work with others of like mind.

To others concerned with the philosophical values of human communications, the Radio Amateur has, in most cases, found the answer, not merely through the exchange of signals but in that peculiar and valuable ability to exchange thoughts and ideas with contemporaries in a hundred nations who make up the great democracy of Amateur Radio.

If there were nothing more than that in Amateur Radio it would be enough. A recent study by the Stanford Research Institute discloses that of the 275,000 Amateur Radio operators in the United States of America, no less than 110,000 of them are associated professionally in some phase of the nation's communications and electronics industry. Of these, at least 94,000 attribute their choice of a career to their experience as Radio Amateurs.

Who can say how much of the technological leadership of the United States today is attributable to the Radio Amateur. And again, who can say, here in our own country, industrial growth through electronics has not been vastly enriched by the knowledge and experience of those who have chosen Amateur Radio as a recreational extension of their professional work.

There is something tremendously unique about a recreational activity that acknowledges the active participation of half a dozen heads of state throughout the world, that numbers amongst its adherents the originators and leaders of some of the world's greatest industries, that brings together in a great confraternity of enthusiasts the research scientists of defence and industry, and yet enlists into that same fraternity on equal terms the thousands who see in Amateur Radio a challenge to learning and an opportunity for friendship.

Here is an arena where an operator's telegraphic key or microphone is a passport to instant friendship, where a call will bring—hopefully—an instant reply from a fellow in some distant corner of the world who is immediately your friend "Joe" or "Roberto", Francisco, Pierre or Toshahide, whose name and conversation you will recall when next you meet.

In the whole radio frequency spectrum, there are preserved only narrow Amateur bands, safe we hope from commercialism, but free for the peoples of the world to talk to each other in mutual interest and friendship. Kilocycles for kilocycles, there is no piece of the spectrum that contributes so much to the warmth of international understanding or to the exchange of information as do the Amateur bands.

It may be that the days when Amateur operators contributed to the development of new techniques and invention have been overtaken by the enormous growth of technology to which their early efforts made such magnificent contribution. Today, real discovery has moved into the well and expensively equipped laboratories. But the Radio Amateur has a unique opportunity to apply technology, to test theory, and enjoy the doing of it, for surely Amateur Radio is the most rewarding and satisfying of technical activities.

So that, in the Contest which is about to begin, we will remember not only our fellow Amateurs who served their country in war, but those who enrich their experience and devote their talents to a young Australia on the way to industrial greatness.

It is my pleasure to declare this 1967 Remembrance Day Contest now open.

TEST EQUIPMENT

S.W.R. METERS

KYORITSU Model K-109 Standing Wave Ratio Bridge, 1 : 1 to 1 : 10 s.w.r. Impedance 50 and 75 ohms. Frequency range 1.5 to 60 Mc. Includes 0-100 d.c. microammeter. **$20.**

HOIKI OL-64 MULTITESTER

Ranges: D.C. Volts 0-0.3, 1, 10, 50, 250, 500, 1,000 and 5,000 volts (20K o.p.v.). A.C. Volts 0 to 10, 50, 250 and 1,000 volts (8K o.p.v.). D.C. Current 0 to 0.03, 1, 50 and 500 mA. Inductance: 0 to 5,000 Henries. Capacitance: 250 pF. to 0.02 uF. Resistance: 0 to 5K, 500K, 5 Meg. and 50 Meg. Ohms. Decibels: minus 20 to plus 22, plus 20 to plus 36 db. (Reference 0 db. equals 0.775 volts equals 1 mW. across 600 ohms).

Price $20.00

SIGNAL GENERATORS

Leader LSG11, 120 Kc. to 390 Mc.

Frequency range (six bands): 120 Kc. to 130 Mc. on fundamentals; 130 Mc. to 390 Mc. on harmonics. Mod. frequency 400 and 1,000 cycles. Uses 12BH7, 6AR5 plus selenium rectifier. Provision for xtal oscillator by use of external xtal (xtal not supplied), 1 to 15 Mc. Dimensions: 7½ x 10¾ x 4½ in. Professionally finished, grey crackle enamel.

Price $30.75

VACUUM TUBE VOLT METER

"KYORITSU," MODEL K-142

Highly dependable for measurements of voltages from d.c. to r.f., output (db.) and d.c. resistance.

A.c. Volts: Sine wave: 0.1v.-1,500v., 7 ranges. Peak-to-peak: 0-4,000v., 7 ranges. Output (db. m): minus 20 db. to plus 65 db. Input Impedance: 1.4 megohms.

D.c. Volts: 0.1v.-1,500v., in seven ranges. Input Impedance: 11 Megohms.

Resistance: 0.2 ohm to 1,000 Megohms, in seven ranges.

The K-142 Vacuum Tube Volt Meter uses a P-60 d.c. 200 microammeter and operates from 240 volts 50/60 cycle a.c. mains. Large clearly calibrated meter gives ease of reading.

Price $57.38

KIKUSUI MODEL 539 3" C.R.O.

240v. a.c. operation. Printed circuit board wiring. 5 c.p.s. to 1 Mc., time base oscillator to sweep 10 c.p.s. to 100K c.p.s. in steps with continuous in-between variation. Ideal s.s.b. measurement with coupled r.f. sampling signal. Weight 11 lb.

Price $125. (Full instruction book supplied.)

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4-Page Lift-out Supplement listing selected range of products useful for Amateur application.

PRICES INCLUDE SALES TAX, BUT ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Availability of Imported Lines are subject to delivery from overseas from time to time.

KYORITSU Model K-126B G.D.O.

Highly sensitive, transistorised Grid Dip Oscillator covering range of 360 Kc. to 220 Mc. Eight color-coded plug-in coils supplied with each instrument. Meter sensitivity 500 d.c. microamps.

Price $41.65

MOSQUITO SIGNAL INJECTOR

Type MS-130

Pocket size instrument finds defective circuits—IMMEDIATELY!

For every technician or engineer who must find defective circuits quickly and exactly, the new Mosquito with detachable probe—pocket size, cordless, pen-type instrument which generates and injects a rich signal covering the audio, i.f. and r.f. spectrum!

The Mosquito contains a transistor oscillator, powered by a single 1.5 volt pen light cell, which completely eliminates the need for a large expensive signal generator. It can be coupled into magnetic pick-ups and circuits **without leads**. And the Mosquito oscillates at approximately 1,000 cycles per second, with a wave form which is rich in harmonics. This is truly the simplest, fastest, **most effective,** most economical way to find defective circuits —it belongs in your pocket now!

Price $15.00

CITIZEN BAND TRANSCEIVERS

TOKAI Type TC-911 9-Transistor Citizen Band Transceivers. P.M.G. approved. Use like a telephone with separate microphone and receiver. Push-to-talk operation. 100 mW. input. Single rod antenna system. Range better than 2 miles over average terrain. Best we have ever tested. Best value on the market.

Price $75.95

JAPANESE INSTRUMENT DIAL

Type Y.N-6

Ratio 7.5 : 1. Calibrated 0 to 200 (red scale) over 180 degrees. Six blank scales for band/frequency calibration. Size 6½ x 3¾ in. Complete with hairline cursor and black moulded escutcheon and perspex clear front.

Price $8.75

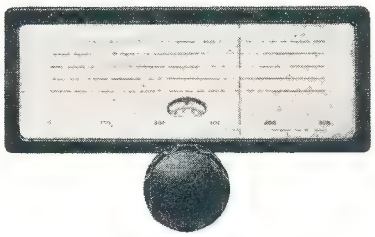
SLOW MOTION DRIVES

Ideal for use where 1 : 1 control is impractical.

Eddystone Type 892 (as used with Type 598 dial). Epicyclic ball bearing drive mechanism. Ratio 10 : 1. Smooth, back-lashfree operation. **Price $3.45.**

Jabel Type 3 6 : 1 planetary drive. Good quality construction at a reasonable price. **$3.75.**

EDDYSTONE INSTRUMENT DIALS

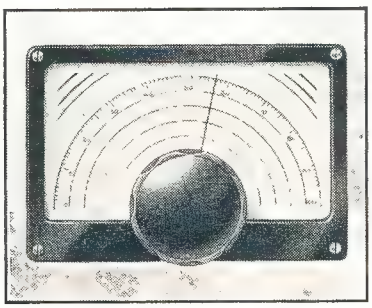


Cat. No. 898

GEARED SLOW-MOTION DRIVE ASSEMBLY

A high grade assembly designed for instrument application. The movement is gear-driven and fly-wheel loaded, giving a smooth, positive drive, with a reduction ratio of 110 to 1. The pointer has a horizontal travel of 7 inches. A circular vernier scale, marked over 100 divisions, rotates five times for one traverse of the pointer, and, read with the "100" scale on the dial, provides a total of 500 divisions.

Price $21.75



Cat. No. 598

FULL VISION DIAL

The epicyclic, ball-bearing drive mechanism is of improved design and has a reduction ratio of approximately 10 to 1. The movement is smooth and free from backlash. The dial escutcheon measures 6 in. long by 4⅛ in. wide plus a 3/64 in. lip. The scale is marked 0-100 over 180 degrees and is 5 in. across. A large fluted instrument knob is fitted. Ripple black finish. Ideal for s.s.b. equipment.

Price $8.19.

WILLIAM WILLIS & CO. PTY. LTD.

430 ELIZABETH STREET, MELBOURNE, VIC., 3000 Phone: 34-6539

William Willis & Co. Pty. Ltd., 430 Elizabeth Street, Melbourne, Vic., 3000

AMERICAN DOW-KEY ANTENNA RELAYS

Coil Ratings: 6, 12, 24 volts d.c. at 2 watts. 6, 12, 24 volts a.c. at 6va., 50/60 cycles. Special coil voltages available on request. R.f. Ratings: 1kw. power rating to 500 Mc.; 20 watts power rating to 500 Mc. in types DK60-G and DK60-G2C in de-energised condition. The DK60-G and DK60-G2C have a special isolation connector in the de-energised position to reduce cross-talk to a minimum.

V.S.W.R.: Less than 1.15 : 1 from 0 to 500 Mc. (50 ohm load).

Isolation: Greater than 60 db. at 10 Mc. in DK60 and DK60-2C; greater than 100 db. from 0 to 500 Mc. in DK60-G and DK60-G2C when in energised position.

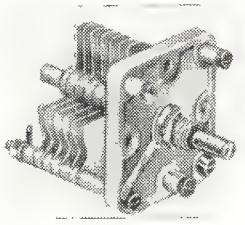
Operating Time: Less than 30 milliseconds from application of coil voltage; less than 15 milliseconds between contacts.

Connections: Standard SO239 type v.h.f./u.h.f. Co-ax. Connectors. Available with Type N, BNC, TNC, C Connectors to order.

	D.C.	A.C.
Type DK60 standard single-pole change-over	$18.12	$19.25
Type DK60-G standard single-pole change-over with special isolation contact in de-energised position to reduce cross-talk	$20.15	$21.15
Type DK60-2C, same as DK60, but includes external set of double-pole change-over contacts	$20.25	$21.38
Type DK60-G2C, same as DK-60-G, but with external double-pole change-over contacts	$21.78	$23.30

CO-AXIAL FITTINGS AND CABLE

PL259 Co-axial Plugs, suit 5/8 in. Cable	98c
SO239 Co-axial Sockets	98c
UG175/U and UG176/U Cable Adaptors for use with PL259	34c
C32-16 right-angle Co-axial Connector, Jack to Plug, suit PL259	$1.88
C32-17 T. Connector—Plug and two Jack Ends—suit PL259	$2.33
C32-14 Coupling for two PL259 Plugs	$1.72
Belling & Lee L734P Co-ax. Cable Plug	32c
,, ,, L604S Co-ax. Chassis-Socket	28c
,, ,, L603/B Co-ax. Chassis-Socket ground insulated	25c
,, ,, L734/S Recessed Co-ax. Chassis Socket	25c
,, ,, L734/J Co-ax. Cable Socket	43c
,, ,, L1421 Bulk-head Cable Socket	56c
,, ,, L616 Coupling — couple two L734/P Plugs	36c
PT81M (UR67) 52 ohm Co-axial Cable, per yard	58c
RG58AU 50 ohm Co-axial Cable, per yd.	35c
PT9M 55 ohm Co-axial Cable per yd.	25c
PT77M 70 ohm (UR70) Co-ax. Cable, yd.	32c
PT11M 70 ohm Co-axial Cable per yd.	40c
FORMULA 11 Open Wire 300 Ohm Transmission Line, 100 ft. coils	$5.06
K20 72 ohm Twin Flat Line yd.	15c
KA47 300 ohm Twin Flat Line (solid or slotted) yd.	8c
KA45 300 ohm Heavy Duty Flat Line (solid or slotted) yd.	12c



EDDYSTONE CONDENSERS

476 Split Stator 15 x 15 pF.	$2.90
580 Single Section 13.5 pF.	$1.95
583 Split Stator 23 x 23 pF.	$2.90
584 Butterfly 32 x 32 pF.	$3.25
585 Single Section 91 pF.	$2.90
586 Single Section 140 pF.	$3.90
587 Butterfly 16 x 16 pF.	$3.90
588 Single Section 27.5 pF.	$2.90
589 Single Section 66 pF.	$2.90
739 Butterfly 10 x 10 pF.	$3.25
738 Double Bearing 100 pF.	$5.27
817 Transmitting Type S. Section 270 pF.	$5.15

VALVE SOCKETS

TELETRON BAKELITE MOULDED AND MICA MOULDED VALVE SOCKETS SKIRTED AND UNSKIRTED

ST27G 7-pin unskirted bakelite	10c
ST27L 7-pin unskirted mica	13c
ST29G 9-pin unskirted bakelite	11c
ST29L 9-pin unskirted mica	15c
ST47G 7-pin skirted bakelite	23c
ST47L 7-pin skirted mica	31c
ST49G 9-pin skirted bakelite	31c
ST49L 9-pin skirted mica	35c
ST48G octal moulded bakelite	10c
ST48L octal mica filled	16c

CANS FOR SKIRTED SOCKETS

1-9/16 inch Can Length—CS7/1 for 7-pin CS9/1 for 9-pin	15c 22c
1-15/16 inch Can Length—CS7/2 for 7-pin	15c
2 inch Can Length—CS9/2 for 9-pin	22c
3-3/8 inch Can Length—CS7/3 for 7-pin	19c
2-3/8 inch Can Length—CS9/3 for 9-pin	22c
Ceramic 7-pin Skirted Sockets	30c
Ceramic 9-pin Skirted Sockets	35c
Ceramic Octal, 4-pin, 5-pin, 6-pin standard Valve Sockets ea.	$1.10

DOW-KEY MANUAL CO-AXIAL SWITCHES

R.f. Ratings: 1 kw. to 500 Mc. Fine silver finish. Fitted with u.h.f. type SO239 co-axial sockets.

DK78-2 Single Pole two throw	$18.22
DK78-3 Single Pole three throw	$18.68
DK78-6 Single Pole six throw	$20.25
DK78-T Transfer Switch	$19.30

TRANSISTORS AND DIODES

AC107	$1.90	2N269	$1.40
AC125	85c	2N270	$1.24
AC126	85c	2N279	$1.16
AC127	96c	2N280	$1.54
AC127/128	$1.86	2N281	$1.25
AC127/132	$1.81	2N301	$1.99
AC128	90c	*2N301	$2.25
2-AC128	$1.81	2N301A	$3.30
AC132	85c	2N370	$1.84
2-AC132	$1.72	2N371	$1.84
AC172	$1.00	2N372	$1.84
AD139	$2.10	2N373	$1.48
2-AD139	$4.21	2N374	$1.48
AD149	$2.22	2N406	84c
*AD149	$2.25	2N408	84c
2 AD149	$4.41	2N410	85c
*2-AD149	$4.50	2N412	85c
AF102	$2.00	2N591	90c
AF114N	90c	2N647	96c
AF115N	90c	2N649	90c
AF116N	85c	2N1010	$1.40
AF116NS	85c	2N1637	85c
AF117N	85c	2N1638	85c
AF118	$2.10	2N1639	35c
AF178	$2.00	2N2613	98c
AS128	90c	2N2614	$1.00
BC107	$1.00	AA119	30c
BC108	90c	2-AA119	60c
BC109	$1.30	AS25	60c
BF115	90c	BA100	44c
OC26	$2.55	BA102	$1.22
2-OC26	$5.10	BA114	39c
OC30	$4.00	BA122	50c
2-OC30	$8.00	BY100	$1.50
OC44N	89c	OA90	28c
AC45N	89c	OA91	29c
OC57	$2.22	OA95	33c
OC58	$2.22	OA210	85c
OC59	$2.34	OA605	55c
OC60	$2.40	OA610	60c
OC65	$2.43	OA620	65c
OC66	$1.43	OA630	80c
OC70	$1.13	OA650	$1.05
OC71N	$1.24	OA660	$1.22
OC72	$1.25	OA670	$1.40
2-OC72	$2.50	OA674	50c
OC74N	85c	OA675	50c
2-OC74N	$1.71	1N37A	28c
OC75N	$1.24	1N617	29c
OC79	$1.40	1N618	33c
OC169	$1.83	1N4193	65c
OC170	$1.83	1N3194	85c
OC171	$1.90	1N3195	$1.22
OC975N	$1.71	1N3196	$1.50
2N217	88c	1N3253	72c
2N217S	88c	1N3254	90c
2N218	90c	1N3255	$1.25
2N219	90c	1N3256	$1.55
2N220	90c	1N3563	$1.71
2N247	$2.50		

* Supplied with mounting material.

COIL FORMERS

3/4 inch Poly. Formers with mounting base and iron slug	30c
7/16 inch Paxolin Formers with mounting base and iron slug	23c
3/8 inch Poly. double slugged I.F. Formers with can	81c
Two-pin Polymax G.D.O. Formers with winding protective shroud for inductances	72c

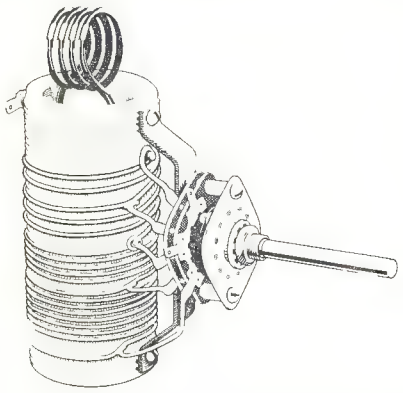
NEON LAMPS

GE Type NE51 M.B.C. 110v. Neon Lamps, 1/4 watt	39c
GE Type NE2 Pig-tail 110v. Neon Lamps, 1/4 watt	25c

PLEASE INCLUDE FREIGHT WITH ORDERS

William Willis & Co. Pty. Ltd., 430 Elizabeth Street, Melbourne, Vic., 3000

PI-COUPLERS



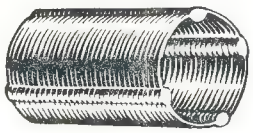
WILLIS MEDIUM POWER TYPE

For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms (Z) and higher into co-axial cable. Operating Q increases on higher frequencies to increase harmonic suppression, enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated or 10 amps. at 2,000 volts with contact resistant (R) of 0.8 milliohms. **Price $8.85.**

Geloso Pi-Coupler Type 4/111 for use with parallel 807s, 6146s, etc. 75 watts. **$3.94**

Geloso Pi-Coupler Type 4/112 for use with single-ended 807, 6146, etc. 75 watts. **$3.94.**

Geloso Pi-Coupler Type 4/113 for use with parallel 807s, 6146s, etc. 100 watts. **$4.37.**



"WILLIS" AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding—use "WILLIS" AIR-WOUND INDUCTANCES

No.	Diam. Inch	Turns per Inch	Length Inch	B. & W. Equiv.	Price
1-08	½	8	3	No. 3002	**59c**
1-16	½	16	3	No. 3003	**59c**
2-08	⅝	8	3	No. 3006	**70c**
2-16	⅝	16	3	No. 3007	**70c**
3 08	¾	8	3	No. 3010	**82c**
3-16	¾	16	3	No. 3011	**82c**
4-08	1	8	3	No. 3014	**95c**
4-16	1	16	3	No. 3015	**95c**
5-08	1¼	8	4	No. 3018	**$1.28**
5-16	1¼	16	4	No. 3019	**$1.28**
8-10	2	10	4	No. 3907	**$1.55**

Special Antenna All-Band Tuner Inductance
(equivalent to B. & W. No. 3907 7 in.)

7 in. length, 2 in. diameter, 10 turns per inch, **$2.76**

References: A.R.R.L. Handbook, 1961;
"QST," March 1959;
"Amateur Radio," Dec. 1959.

A & R TOROID BALUNS

General Specifications: Power Rating—Types A, B, C, 200 watts or 400 watts p.e.p., provided the s.w.r. is less than 2 : 1. Construction—Toroidal ferrite cores, fully encapsulated with epoxy resin and silica under vacuum. Suitable for use in cold to sub-tropical areas. All except 355C and 356C are provided with antenna insulator support brackets. Balun dimensions approx. 2 in. diam. x 1 in. plus socket and lugs. Weight approx. 3¼ to 4 oz.

Installation: When used at the antenna centre, use at least one insulator each side of the brackets and connect antenna leads to Balun terminals with 23/0076 in. or similar flexible wire. (These leads form part of the antenna length.) Types A only: When the Balun and Co-axial Cable are not supported at the centre of the antenna, it will be necessary to tie the co-axial plug to the Balun brackets with nylon cord or wire to prevent the co-axial cable from pulling the plug from the socket.

Type 350A—Impedance ratio 1 : 1. 75 ohms unbalanced to 75 ohms balanced. 3 to 30 Mc. For use at centre of a dipole antenna with co-axial cable feed line or at base end with 75 ohm twin line. Co-axial connector is Belling & Lee L604/S and lug terminals. **Price $4.25.**

Type 351A—Impedance ratio 1 : 4. 75 ohms unbalanced to 300 ohms balanced. 3 to 30 Mc. For use at centre of a folded dipole antenna with co-axial feed line or at base end with 300 ohm twin line connector and terminals as 350A. **Price $4.25.**

Type 352A/BC—Details as 350A except freq. range 500 Kc. to 5 Mc., or to 30 Mc. for receiving purposes only with increased attenuation. **Price $4.25.**

Type 353B—This is a type 350 with a co-axial socket SO239 (Amphenol screw type). **Price $4.92.**

Type 354B—Type 351 with SO239 co-axial socket. **Price $4.92.**

Type 355C—Impedance ratio 2.1 : 1. 52 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. For use at the base of a mobile whip antenna, coupled to fixed or adjustable transmitter output impedance. Lug terminals. **Price $4.92.**

Type 356C—Impedance ratio 3.1 : 1. 78 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. Lug terminals. Use as 355C. **Price $3.87.**

MODULATION TRANSFORMERS

BRITISH "WODEN"

Type No.	Audio Watts	R.F. In. Watts	Max. Sec. Current	Price
UM0	10	20	60 mA.	**$16.60**
UM1	30	60	120 mA.	**$23.31**
UM2	60	120	200 mA.	**$30.30**
UM3	120	240	250 mA.	**$32.60**

MAINS TOGGLE SWITCHES

German knife-blade type, self-wiping contact Toggle Switches:

Type APR—

1016C single pole changeover	**47c**
1019C as above with centre "off"	**50c**
1011C single pole "on-off"	**40c**
507 two pole "on-off"	**69c**
509 two pole changeover end contacts	**75c**
519 two pole ch'geover rear contacts	**75c**
559 four pole changeover	**$2.56**
649/2 two pole changeover centre "off"	**$1.06**

PUSH BUTTON PANEL SWITCHES

Type APR –

1212C push to break return "on"	**60c**
1213C push to make return "off"	**60c**
1316 single pole changeover	**$1.80**

GELOSO V.F.O.

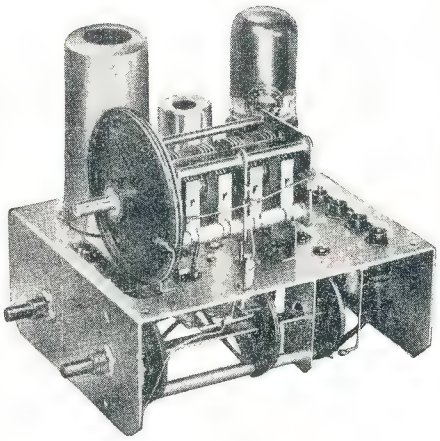


Illustration: Model 4/102

Model 4/104 V.f.o. Unit: Tunes 80, 40, 20 15, 11 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6CL6 and 5763 valves. **Price** (valves extra) **$24.55.**

Model 4/102 V.f.o. Unit: Tunes 80, 40, 20, 15 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6J5G, 6AU6 and 6L6 valves. **Price** (valves extra) **$24.55.**

Model 4/105 V.f.o. Unit: High stability unit using output from relatively low variable frequency generator mixed with the output from a quartz-crystal generator. Low frequency generator covers range of 500 Kc. on the 80, 40, 20 and 15 metre bands and 1 Mc. on two sections of the 10 metre band. Uses 6U8, 6AH6 and 6CL6 valves. Suitable for use in s.s.b. transmitter. **Price** (valves and crystals extra) **$38.43.**

Each model comes complete with calibrated dial, pointer and perspex escutcheon. Full circuit diagram with each kit. Valves and crystals extra.

GELOSO KIT FOR D.S.B. TRANSMITTER

The following components comprise the GELOSO Kit for construction of D.s.b. Transmitter. For circuit details refer Nov. 1965 issue of "Electronics Australia".

4/105 Crystal controlled Beat Frequency Oscillator	**$28.12**
N1657 Calibrated Dial, Pointer and Escutcheon	**$6.30**
N4/113 Pi-Coupler	**$4.85**
N771 Condenser	**$4.50**
N774 Condenser	**$4.50**
N17634 All Wave R.f. Choke	**96c**

Valves not supplied with V.f.o.

Valves for V.f.o.: 6U8, 6AH6, 6CL6.

LOW PASS FILTERS

A "Cabena" Low Pass Filter will fix t.v.i. Cut-off frequency, 30 Mc., attenuation at 60 Mc. better than 30 db.; insertion loss, negligible. Impedance 50-72 ohms.

Price $11.50

RESISTORS

Cracked Carbon Resistors, 5%, ½w.	**10c**
Cracked Carbon Resistors, 5%, 1w.	**12c**

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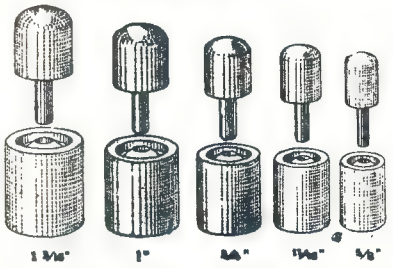
William Willis & Co. Pty. Ltd., 430 Elizabeth Street, Melbourne, Vic., 3000

PUNCHES



WILLIS HAMMER DIE PUNCHES

WILLIS hammer type die punches are made to precise sizes for use in industry wherever a clean, round hole is wanted. Designed to punch down to 14 gauge steel. Centre remnant removed with a flick of the hand. Can be used in die press. Special sizes made to order at slight additional cost.

3/8 in.	$2.40	1-1/2 in.	$6.00
7/16 in.	$2.40	1-5/8 in.	$6.40
1/2 in.	$2.60	1-3/4 in.	$7.20
5/8 in.	$2.60	1-7/8 in.	$8.00
11/16 in.	$2.80	2 in.	$8.40
3/4 in.	$3.00	2-1/16 in.	$8.60
13/16 in.	$3.20	2-1/8 in.	$9.00
7/8 in.	$3.80	2-3/16 in.	$9.40
1 in.	$3.80	2-1/4 in.	$9.60
1-1/16 in.	$4.00	2-5/16 in.	$9.60
1-1/8 in.	$4.00	2-3/8 in.	$10.40
1-3/16 in.	$5.00	2-1/2 in.	$11.00
1-1/4 in.	$5.20	2-3/4 in.	$12.40
1-5/16 in.	$5.20	3 in.	$13.40
1-3/8 in.	$5.60	3-1/4 in.	$15.80
1-7/16 in.	$5.90	3-1/2 in.	$18.20

Q-MAX CHASSIS PUNCH

SCREW TYPE

3/8 in.	$1.88	1-7/32 in.	$3.80
7/16 in.	$2.00	1-1/4 in.	$3.80
1/2 in.	$2.00	1-5/16 in.	$4.08
9/16 in.	$2.00	1-3/8 in.	$4.08
5/8 in.	$2.00	1-1/2 in.	$4.08
11/16 in.	$2.56	1-5/8 in.	$4.44
3/4 in.	$2.56	1-3/4 in.	$4.44
13/16 in.	$3.08	2 in.	$5.60
7/8 in.	$3.08	2-3/32 in.	$6.64
15/16 in.	$3.68	2-1/2 in.	$7.92
1 in.	$3.68	1 in. sq. hole	$5.56
1-1/16 in.	$3.68	11/16 in. s. hole	$5.32
1-1/8 in.	$3.68	21/32 x 15/16 rectang. hole	$7.62
1-3/16 in.	$3.68		

"JABEL" TR14 REAMERS

Ideal for clean finish on small panel holes and cleaning out for neat fit.

Price $1.05 each

"ADEL" NIBBLERS

Makes area cut-outs for transformers, etc., as simple as ABC. **Price $7.50.**

PENETROX "A"

Famous American aluminium and copper corrosion inhibiter. Avoid bad electrical connections and corroded joints on beam antennae, T.V. antennae, etc. Use PENETROX "A".

Price $1 per tube

C.R.C. FORMULA 2.26 FLUID

For use on electronic and electrical equipment of all kinds. Displaces water and moisture. Improves electrical properties. Protects metal surfaces and lubricates.

16 oz. Pressure Packs, **Price $3.00**

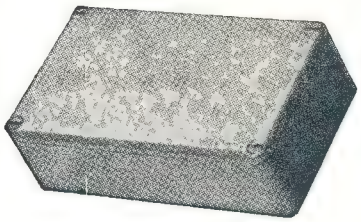
POWER TRANSFORMERS—Voltage Doubler Types

Type No.	ELECTRICAL DATA: H.T. Secondary Volts	Max. D.C. mA.	Heater Windings V.	Heater Windings A.	TYPICAL PERFORMANCE—fully loaded: Effective Series Resistance Ohms	Rect. Min. P.I.V.	Input Cap. Each uF.	Addit. Series R	D.C. O/P Volts	Price
PT 2062	115 tap 105	80	6.3 CT	2.25	25	400	100	0	290 265	$7.60
PT 2063	135 tap 125	80	6.3 CT	2.25	29	400	100	0	340 315	$7.89
PT 2067	120 taps 110 100	100	6.3 CT	4	22	400	100	0	310 285 260	$9.00
PT 2064	135 tap 125	125	6.3 6.3 CT	2.25 2.25	16	400	100	0	340 315	$10.13
PT 2065	115 tap 105	150	6.3 CT	6	10	400	100	0	290 265	$10.40
PT 5324	124 taps 114 104	150	6.3 CT 6.3 CT	3 3	17	400	100	0	310 285 260	$9.75
PT 2066	125 tap 105	190	6.3 CT	6	7	400	100	0	320 265	$11.25
PT 2068	195 taps 185 175	200	6.3 6.3 CT	4 3	14	600	100	0	500 475 450	$15.93
PT 1965	115	300	12.6 CT	5	4	400	100	5	270	$15.85

Conventional Power Transformers also available. Prices on application.

FILTER CHOKES

Type No.	Inductance Henrys	Max. D.C. mA.	Resistance Ohms	Max. D.C. Working Volts	Type Filter	Price
3040	12	100	290	600	Cond. Input	$3.65
3041	12	125	275	600	,, ,,	$5.71
3090	2.5	150	125	600	,, ,,	$2.35
3042	12	150	205	600	,, ,,	$6.85
3043	12	175	185	600	,, ,,	$7.60
3044	12	200	165	600	,, ,,	$9.28
3045	10	250	130	1000	,, ,,	$10.50
3046	10	300	90	1000	,, ,,	$13.21
3047	5–15	250–50	70	1000	Choke Input	$10.50
3190	3 mH.	150	15	R.F. H.T. Choke for use in D.C.-D.C. Converters		85c
3191	0.15 mH.	4 Amp.	0.05	L.T. Choke for use in D.C.-D.C. Converters		56c



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Type 903 7⅜ x 4-11/16 x 3 in. **$4.86**

TELEPHONE TYPE PLUGS AND JACKS

Plug—shielded cover nickel plated C20-1	72c
Plug—insulated phenolic cover C20-3	60c
Plug—shielded cover chrome plated C20-5	50c
Plug—insulated phenolic cover C20-6	52c
Plug—brass P.M.G. type bakelite cover No. 150	71c
Jack sockets for above ½ inch mounting bush C20-2	32c
Jack sockets for above ⅜ inch mounting bush C20-4	32c
Plug—miniature telephone type C30-1	38c
Plug—miniature telephone Bulgin P519	50c
Plug—miniature telephone Bulgin P529	70c
Jack socket suit C30-1, P519, P529, J30	54c
Plug—compact insulated cover Bulgin P38	54c
Plug—shielded side entry Bulgin P536	86c
Plug—shielded P.M.G. type Bulgin P538	77c

PLEASE INCLUDE FREIGHT WITH ORDERS

OUR HOBBY OPENS THE DOOR TO HAPPINESS

Many times we have to listen to stories which our friends tell us and often people say that they find it difficult to make new contacts. They feel inadequate because they have no hobbies, or any avenues to expand friendship. Usually this situation arises when children are brought up in a home where the parents have no hobbies whatsoever.

Amateur Radio in any home lends an atmosphere of warmth and friendship. Hams are of the opinion that their hobby is the greatest of them all, and there is ample justification in saying so. What other hobby opens up friendship between all the peoples of the world?

Within minutes, people are stretching out a hand of friendship right across the globe—what other hobby will make people call each other by their first name in minutes? Cheerful voices float through the air from one house to another, and one contact leads to another. In an hour, a Ham can speak to 10 or more people, or less if he or she wishes. You can travel from Hong Kong to Malaya, Australia, Guam, Taiwan, Korea, Burma, Siam, Seychelles, or to Marion Island in an hour. Some Hams are going to bed, others preparing for dinner, and if the U.S.A. is included, then a hearty "good morning" is extended to that country, if it is afternoon in South Africa.

If Hams travel around the country in the course of their daily routine, or go anywhere on pleasure, they can take their hobby with them. A mobile rig can be put into a car and a station operated while driving. Hams at sea take their equipment with them. Often Hams speak to operators in the different oceans, from oil tankers to passenger liners. These intrepid travellers can never say they find it hard to make friends. No sooner are they in a port than they head straight for some Ham shack.

If Hams prefer to operate a Morse key, then the fingers do all the work. It takes longer perhaps to say something, but a keen sense of perception is developed. The ear becomes attuned, and during times when conditions are poor, the telegraphy will succeed where the microphone will fail. Some Hams have never owned a microphone.

Romance has resulted from friendships made over the air. One YL and an OM used to talk frequently in the U.S.A. They were at least 3,000 miles apart and the weekly talks led to daily chats. Eventually they decided to meet at a point half-way so each one travelled 1,500 miles. Marriage resulted, and the pair settled down happily to a life of "dit-dah". In due course, little Harmonics arrived, who no doubt will become Hams in time to come.

This hobby is a boon to people who are confined to bed, or to a wheelchair. Even blind people weave their lives around Amateur Radio. At any time of the day, someone is waiting to share some minutes or hours with another human being. Life assumes a more rosy hue because of this hobby, which opens so many doors. Visitors are usually found to have the mutual interest.

Lasting friendships have been made over the air—sometimes one does not necessarily meet the Ham on the other side of the globe, but a daily talk is part of the routine. Some people have made more than 1,000 contacts with the same person and enjoyed every moment of each chat. On occasion when a contact is made, a Ham has been known to say, "I last spoke to you 15 or 20 years ago". It is not a case of memory always, because many Hams keep an up-to-date index card system. It certainly would add an aura of warmth to a chat after such a long time.

Every day, somewhere in the globe, Ham meets Ham, and in this instance, the meeting is between people of two different countries. Someone knocks on a door in Los Angeles, California, U.S.A., and when it is opened says, "I'm Mr. XYZ from South Africa." Even before the salutations are completed, the visitor is ushered into the house and treated like Royalty. This is referred to as an "eyeball QSO". Such friendships lead to close kinship and often the visitor is taken all over the particular State or country, feted at a banquet, etc., before he leaves. As one door closes, so another opens.

Those who are attracted to the hobby of Amateur Radio are indeed fortunate. They say, "one man's meat is another man's poison", and there are many people who shake their heads and say that they would find all that talking would give them a headache. Probably Bird Watching would appeal to them more, or even fishing. That may be self-satisfying in a way, but you can't make so many friends through these hobbies. Admittedly, groups may indulge in these outdoor pursuits, but what do you do when it rains?? Not so many doors can be opened to you anywhere and everywhere.

In times of emergencies, Radio Hams can give tremendous help to the authorities. When communications are destroyed through water or fire, the path to speech is open—the air waves are waiting for the voices to send out distress calls, to bring helpers to the scene, food or medicines if required, etc. No other hobby can do so much for mankind in such a short space of time.

(The above was forwarded by Eric Trebilcock, and was extracted from the South African Women's Radio Club's magazine, "YL Beam.")

— . . . —

POSITION OF PLANETS LINKED TO SOLAR FLARE PREDICTION

BY REX PAY

Los Angeles.—Watch for major solar proton storms on May 22, 24 and 27, probably June 8, and very probably June 25, 27 and 30. **Expect solar flare activity to peak at the end of 1968, with a Wolf relative sunspot number of 175 at least, possibly reaching an intensity equal to the last maximum, which was the highest recorded.**

These predictions come from calculations of the time rate of change of the gravitational field at the Sun's surface, taking into account local areas of persistent solar activity and their alignment with respect to the Earth.

Principal influences on the rate of change of the gravitational field at the solar surface are the planets. Although their gravitational effects are many orders of magnitude less than that of the Sun itself, the time rate of change of the resultant planetary field vector appears to have some triggering effect on the release of solar flares. It appears, therefore, that solar flares can be predicted from the positions of the planets.

UNDERSTANDING LACKING

Describing the gravitational vector technique for predicting solar flares, Dr. Richard Head, of N.A.S.A's Electronics Research Centre, told "Technology Week" that although the predictions had so far worked out very well—with an accuracy of about half a day—there was as yet no understanding of why this should be so.

The technique provided predictions to the **Lunar Oribter I.** operations staff of the intense proton storm occurring at the end of August 1966, just after the completion of the photographic mission. Because the technique relies on planetary motions, it can provide very long-term predictions.

With the success it is achieving, the gravitational vector technique is drawing increasing interest from N.A.S.A. and the academic community. Furthermore, this interest is likely to increase many fold if another speculative theory is confirmed. Contained in a 1965 report by National Engineering Science Co., this theory states that variations in the Earth's ionosphere have a much larger effect on the troposphere, and so on surface weather, than has previously been assumed.

If this theory is correct, then solar flare activity will be relayed through the ionosphere to the troposphere and will directly influence surface weather there.

Striking evidence that planetary effects pay a part in sunspot activity has been provided by J. H. Nelson, of R.C.A. The effect of increased sunspot activity that Nelson is particularly concerned with is the interruption of ionospheric radio propagation. In studies that have been under way since 1940, he has found that disturbed conditions for radio propagation exist when two or more planets line up with the Sun or form an angle of 90 degrees with the Sun. Refinement of these observations has enabled Nelson to predict disturbed conditions a considerable time in advance. He was able to predict the radio blackout of November 12, 1960, 14 months ahead of its occurrence.

PLANETARY HARMONICS

Calculations of the tidal forces on the Sun due to the seven inner planets, carried out by C. J. Bollinger, showed a cyclic pattern that may be relatable to solar activity cycles. K. Takahashi has calculated tidal forces on the Sun and correlated the periodicities that appear with periodicities in solar activity and in meteorological phenomena (500 mb height anomalies).

W. H. Portig presents a harmonic analysis of sunspot activity in the N.E.S.C.O. report and suggests that the cyclic variations have components that are harmonics of a basic cycle of 178 years. Jupiter's orbit time of 11.86 years corresponds closely to the 15th harmonic. The repetition time after which Jupiter and Saturn are in conjunction or opposition, 9.93 years, corresponds closely to the 18th harmonic. When these two components are extracted from the sunspot cycle, a 16th harmonic with a period of 11.125 years remains. This is yet to be identified. Portig regards these results as proof that Jupiter and Saturn have positions that favour sunspots.

Head's predictions for the latter half of 1967 start with a possible event on July 3, followed by events on July 23, August 5 and 26, and September 15. Events are also predicted on a somewhat low probability for October 11 and November 5. The various levels of probability arise because these predictions are made at the beginning of the sunspot cycle and there are very few data available on the detailed behaviour of sunspots at the beginning of a cycle. Head expects that as data on sunspot behaviour are gathered this year and next, the accuracy of the prediction will improve.

[Acknowledgment to "Amateur Radio Facts," produced by Bill Orr, W6SAI.]

— . . . —

SIDEBAND

(Continued from Page 7)

being barely worth the trouble of driving into grid current. The class AB1 s.s.b. output stage uses a variable drive signal, the same as a modulator, the only difference being that it uses tuned circuits instead of transformers. Because tuned circuits exhibit the "fly wheel" effect and audio transformers do not, it is possible in r.f. service to use the tubes in "parallel" instead of "push-pull". Otherwise, the element voltages, currents and power figures published for modulator service are a very good guide for r.f. linear amplifier service—remembering that the load impedance for two tubes in parallel is one quarter of the published plate-to-plate load for the push-pull modulator.

The notes this month were not written for those who know all about sideband, or can afford to buy "The Thing" already made. I trust they may be of some help to those others who have to battle through the hard way.

73, for now, Phil VK5NN.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R.," in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

Please address all articles to the

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Transistorised Power Supply

(Continued from Page 3)

If you are lucky, the two resistors will have tolerances in the opposite direction and hence the error on the 20 volt range will be even less. However, the lower resistor should of course be used on the 10 volt range and is selected as follows:

For the time being, do not wire in either resistor. Hold resistor A in position and wind the supply output up until the voltmeter indicates exactly **full scale**. Remove resistor A and substitute B whilst observing the meter indication. The lower resistor gives the higher meter reading.

These extra meter ranges make the unit far more useful and easier to use.

One particularly interesting use is the testing of transistors.

TRANSISTOR TESTING

Small Transistors

(a) Set the power supply at 2.2 volts output.

(b) Connect the collector and emitter leads of the transistor under test (T.U.T.) to the appropriate output terminals.

(c) If at this stage the overload lamp glows, the test is finished as is the T.U.T., i.e. the wretched thing is S.C.

(d) Provided all is okay, switch the meter down through the ranges until an easily readable indication of current is obtained. This reading is generally in the microampere region and is known as the I_{CBO}.

D.c. forward current transfer ratio (h_{21E} d.c.).

(e) Leave the T.U.T. as in step (b), return meter range switch to the highest position. Bridge a 22K ohm resistor (hand held) between the collector and base connections to obtain a base current of 100 microamperes approx.

(f) Switch the meter down through the current ranges until an easily readable current indication is obtained. This figure (in mA.) multiplied by 10 is the h_{21E} d.c. Note, higher voltages may be used for the above tests provided that the power ratings of the T.U.T. are rigidly adhered to. Failure to do so will result in the untimely demise of yet another transistor.

Power Transistors

The test procedure for these types is essentially the same as outlined above, except that higher voltages and currents are involved.

Take for instance an OC29. I would normally test a transistor of this type with 12 volts between the collector and emitter using a base resistor of 5.6K ohms. This gives a base current of 2 mA. (approx.). The d.c. forward current transfer ratio is obtained simply by dividing the resulting collector current (in mA.) by two. Although power transistors are more robust than the "little fellas", it is still a wise practice to keep the measuring time down to a minimum.

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DX

Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynot St., West End, Brisbane, Qld., 4101

Predicted sunspot number for October is 101. This for a DXer is akin to class cuisine for a gourmet. 21 and 28 Mc. are already open during the daylight hours and a big improvement is expected on these bands. 20 mx seems to be the best band at the moment with good paths to Europe around 0700 and 2030z. Africans are also workable. The night circuit to the North West, which is usually very reliable is not operable yet on 14 Mc., but this should appear soon. Some South Americans have been worked on 7 Mc. at 1000 and a little later. Js and UAs are audible on 80 mx.

NOTES AND NEWS

Shetland Is.: GM3SVK on 14193 at 0245z.

Gambia: ZD3G at 0520z, transmitting freq. 14197. Otto K6ENX, QSL Manager for ZD3G, informs us that Ray will be departing Gambia in September or early Oct. This will make ZD3 a tough one, once more. Ray's operation from there is an excellent example of how some serious operating will clean up a rare one in short order.

Aldabra: A letter reports that G3UDU is due to arrive in Aldabra mid-August. He will be there for six months and will sign VQ9JW. John will use a c.w./s.s.b. transceiver on all bands, 10-160 mx. There will be no mail service to the island but Maurice G3NWQ hopes to be able to QSP requests for skeds.

Wake Is.: WA4QXB/KW6 on 14050 at 1600z.

Cocos Keeling: VK9ZCF reports that ZC2T is a phony. Barry is the only legitimately active station on the island now, but is confined to 6 metres.

Raratonga: ZK1CI will be QRV for three years from here, operating 80-15 phone and c.w. QSL P.O.B. 103. He is ex-ZL1AWT.

Sakhalin Is.: UA0ER, UA0FF and UA0FM all busy from Zone 19 on 14 c.w.

Franz Josef: UA1KED on 14007 at 0200z.

Greenland: Curt XP1AA on 14220 at 2210z. QSL to 1983 Comm. Sqd. A.P.O., New York, 09023.

Afghanistan: Fred YA1FV on 21300 at 1820z. QSL via ISWL.

Laos: XW8AX, XW8BZ and XW8BJ on between 1645z and 1715z around 21300.

Malta: Ted 9H1AG on 21030 at 1345z.

Faeroe: Johs OY9IM on 14153 at 0300z. QSL to Box 184, Torshava, Faeroe.

VQ1GDW: Willie of VQ1GDW fame is now in the relative tranquility of CX. Call there is CX9AAN. Logs and QSLs for the VQ1 operation are with W2CTN.

Chad: 5U7AL has plans to operate from here in October or November.

Muscat: MP4MAY on 14115 at 2000z.

Lesoto: Ulli, long known as ZS8L, now signs 7P8AR, the new call for this country. Heard on 14197 listening on 14202 at 0600z.

Antigua: Harold, formerly ZD8HL, etc., will begin operating from here shortly.

Ethiopia: ET3USA on 14217 at 0030z.

Pitcairn Is.: Ron W3DWG will be active for approx. six months from here. Most operation will be 21 Mc. s.s.b. with 21350 as the most preferred freq.

Cameroun: Martial TJ1AC on 21334 at 2140z. QSL Box 20, Bafoussam, Cameroun.

South Orkney: VP8JD reported on 14 and 21 Mc. c.w. at 2100 and 1800z.

Andorra: PX1EQ, 1629z on 21374. QSL to DJ8EQ.

Svalbard: Erl JW3NI on 14036 at 0311z. QSL to LA3NI.

Yemen: 4W1C on 14102 at 1930z. QSL to W2CTN.

Tristan de Cunha: ZD9BI on 14225 at 1930z.

Mt. Hermon: 4X7MR on 14215 at 1930z.

Corsica: Pierre F2WS on 14215 and 14105 at 1900. QSL to home call or via Bureau.

Monaco: Jean 3A2MJC on 14225 at 0540z. Also holds call 3A2EE. QSL to Jean, Kennedy St., Monte Carlo, Monaco.

(Most of the above by courtesy of Dr. Howard Klein, DX Editor of LIDXA.)

Tuamotu Arch.: FO8BU QRV 14103 0615 daily.

Mariana Is.: KG6SA 14205 1425. QSL C/o. U.S.C.G., 935, Box 338, F.P.O., S.F., Sal., 96950.

Bismark Arch.: VK9VM 21340 1030.

Isle of Wight: G3RXC 3.6 s.s.b. 0900.

Easter Is.: CE0AE 14200 0800. QSL WA5PUQ.

San Andreas: HK0AI 14165 0600. QSL via W9WHM.

W. Caroline Is.: KC6BY 14205 1603.

W. Pakistan: AP2MR 14110 1700. AP5HQ 14025 0600.

Guernsey: GC8HT 14133 1400 and various other times. Also GC3FMK 21040 1200z.

Kure Is.: KH6EDY 14271 0730.

Andreanof Is.: KH6FOJ/KL7 14212 0745. Also Fox Is.: KL7CGA 14270 0700.

Sth. Georgia: VP8IE 14117 1845. QSL W2GHK.

Gough Is.: ZD9BH 14 c.w. with very QRP rig.

Marion Is.: ZS2MI 14178 1400. QSL ZS4OI.

(The bulk of the above supplied by Geoff Watts, Editor DX Newsheet in U.K.)

Nuie: ZK2AE active on 80 mx a.m. Try around 3.6 at 0800.

St. Helena: ZD7KH 14200 and 21335 around 0700. QSL K2HVN.

Tristan da Cunha: ZD9BE is about to QRT but ZD9BH will carry on. 14 s.s.b. QSL W2GHK.

Botswana: ZS9L is on 14178 transceive.

Comoro Is.: FH8CE 14135 1730, 21340 1800, 28575 1000. Also active is FH8CD.

C.A. Rep.: TI8DL 14102, 14215 after 0600. QSL Box 924, Bangui.

Falklands: VP8FL 14125 2000.

Port. Timor: CR8AH 21250 1000 on a.m. mode. QSL J. Santos Leite, Box 225, Dilli.

Mongolia: JT1KAA is reported as consistently strong on 14105. Listens 14200. QSL Box 639, Ulan Blator.

Fletcher's Ice Island: WA1ARF/KL7 14315 0800.

Trinity Is.: KL7DND 14306 0900.

(The above received from DX Ed. Goe Studd of N.Z.A.R.T. "Break-In".)

Bay Island: HR6EB is reported very active from here on 14 s.s.b. after 0600.

Taiwan: BV2A is QRV 14 c.w. 1000. QSL P.O.B. 101, Taipei, Taiwan.

Deception Is.: LU2ZI 14010 also on 7 Mc. 1000.

Pakistan: AP2NMK is reported active now.

Lord Howe Is.: Once again Arch Hewitt will spend his vacation at this tranquil spot. He will be active from Oct. 3 to 20. Mode A1 and mainly 14038, but other bands if conditions are suitable. Call VK5XK/2.

ACTIVITIES

Dave VK3QV says 28 Mc. has picked up again. He lists the following as worked: KA2KK, KR6LS, KX6DC, VK8AU, VS6FS, VS9ABL, ZE1JJ, 9J2DT, VK9XI, VK9DJ, VK9BS, VK9BK (Lae), plus most of the W areas. Dave is off on a world business tour. No DXing included. (Bon voyage.—Al.)

Chas VK4UC writes to say he is QRL with many things, but did manage these on 14 Mc. c.w.: HA8UF 0800, HA5DA 0440, DJ7DS 0530, DL6ZZ 0500, G3UBE 0700, HB9AEB 0600, YU-5JYZ 0600, YO6AW 0500, UF6FS 0300, UY5FF 0400, F5MG 0800, G8RL 0600, SP1BHX 0440, KP4CLB 0630, I1BRM 1000, VK0CR 0600, PZ-1BW 1030, GC2FMV 0640, DJ5JK/LX 0420, VP6WR 1030. Best QSLs received were KJ-6BZ, VO1AW, WA8SVU/VP9, VR3L, CT2YA, KG6IF, HS1JM, GB2SM, TG8IA, YS1VST, ZL1AI and 5W1AS.

Peter VK4PJ reports various openings on bands 40 through 10 mx. On 14 s.s.b. he lists the following: DL8OA, PY3BXW, ON4IZ, G8FC, UA4KED, I1RTF, 4X4AM, SM5AZU, IS1LIO, G3NAS, F3DD, SM5HK, UQ2KBH, EA8BQ, KL7WAH, PA0EC, OH5DH, OA3KBO, LX1WR, 9L1KG, PA0DEC, HB9YQ, F2BWP, LA6EI, PX1IE, CE3ZN, PY3APH, CT1BT, OH2BHN, ON4QJ, EI4AZ, G8NY, W3DWG/VR6, ZP3AL, VS6FV, G6TA and many more.

Peter reports South Americans workable on 7 Mc. at 1030z. (Thanks OM.)

Dud VK4MY logged these. Conditions are on the improve he notes. 14 s.s.b.: VK4HG 14160 0716, PJ3CR 14155 0700, W0ICJ/KM6 14300 0045, TG9OP 14120 0700, VE1WH 14180 0730, VE8MK 14125 0725, IT1TAI 14120 0500, TI5CMR 14150 0600, VR2CC 14110 0550, VQ5G 14100 1212, PJ-3CC 14150, 0700, CT1BT 14190 0630. On 14 c.w. ZS6BL 14032 0700, 9L1KG 14050 0813, 6W8DD 14050 0730, and more.

Ken VK3TL has a lament. He is running out of countries to work. 14 Mc.: SL2ZI, IS1RUA, DJ2IB/LX, VQ9HJB, 9L1GQ, 9L1KG. QSLs rcvd. were VQ9AR, ON8XA, CR4BC, MP4MAW, CX9CO, OK5KMB, 5W1AA, CT3AS, VQ8CA, U5ARTEK, CX9AAU, CX9AAN, GB2SET and EL2S.

Keith VK4DU from his Utopian QTH worked the following on 14 c.w. in one hour using 2.5 watts and doubling in the final: DL2KM, K6TYQ, OZ7KV, I1AMO, F8VN, WA8FHF, G3CQS. Also many QSOs have been made on 21 Mc. with less than 1 watt.

SOME QTHs

9L1KG—Yasme.
DJ2IB/LX—DJ2IW.
PJ3CC—W3AYD.
VQ9G—Box 191, Mahe, Seychelles.
VK4HG (Willis Is.) –Via VK3 Bureau.
5W1AS—Box 498, Apia.
VP5RS—K7UXN.
TA2AC—K4AMC.

OH AWARD (issued by S.R.A.L.)

Contacts must be made after June 10, 1947. DX applicants have to produce evidence of QSOs with at least 15 OH stations in at least five OH call areas. Certified by two A.R. officials is sufficient. C.w. or phone, or mixed is okay. Contacts with marine stations will not count. Details required are station worked, date and QTR plus report. Send list with five I.R.C's to OH Award Manager, P.O. Box 306, Helsinki.

(Supplied by courtesy of Award Hunters' Club.)

SUMMARY

My thanks again to the column's supporters. DX news, reports on conditions, QTHs etc., are always needed, so please fellars, help swell the mail bag. 73, Al VK4SS.

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FIFTY AND OVER

BY ROY HARTKOPF*

VK3ZFC, VK3ZFC, VK3ZFC. This is VK3ZOM Mobile calling you, Bert. VK3ZOM Mobile calling you. Over. VK3ZFC, VK3ZFC, . . . Received you that time quite okay, Bert. The converter seems to be working better now. Yes you heard right. I'm mobile. I've been meaning to get round to it for months. That's why I haven't been on the air for the last week or so. I've been too busy getting the gear ready. Hope you can still copy me, VK3ZFC, this is VK3ZOM Mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM Mobile returning. Yes. Bert, all copied a hundred per cent. Thanks for the report. Glad to know that it's such a good signal. You say you're surprised at the lack of mobile flutter? Well, Bert, I'm not actually driving along. I'm stationary mobile in the drive at the side of the house. I've got one or two little things to finish off before I can just jump in and drive off. Part of the rig's sitting in the glove box and the rest is on the seats and the floor. But never mind, I've made a start and that's the main thing. VK3ZFC, this is VK3ZOM stationary mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Glad to hear you like the modulation, Bert. I suppose it is better than most of the mobiles. It's funny that you should say it's almost as good as the home modulator because actually it is the home modulator. I'm going to get another one, of course, but I wanted to get on the air as quickly as I could so I used what I had. As a matter of fact the rest of the rig is the home gear too. It's a bit hard to tune the AR7 when it's sitting on the floor in the back and, of course, there's no room for anyone else in the car except the driver. But never mind, the main thing is to get mobile. One can always fix up the little details later. VK3ZFC, this is VK3ZOM mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Well, Bert, I must say you **have** got a good memory. It's months since I told you about the home rig. Fancy you remembering I am running 80 watts! You're quite right. The power supply is a bit of a problem. But I'm not actually worried about running the car battery flat. You see I'm using the home power supply with a mains lead out through the window. That's one of the details I'll have to organise before I can actually operate while I'm driving along. VK3ZFC, VK3ZFC. This is VK3ZOM mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. It's strange you should mention aerials, Bert. No, I'm not using a whip; that's another little detail I'll have to fix. But meantime I figured that since I had to have a mains lead out through the window I might as well have the home aerial lead as well. It saves such a lot of time and trouble. I'm afraid I'll have to stop now, Bert. I've got to clean the car and the leads aren't long enough for me to be able to work mobile at the other end of the drive. Mind you, as I said, there's a couple of little details to fix up, but I've got started and it's fine to know you're operating away from the shack and independent and out in the fresh air with the birds singing and everything. Why don't you go mobile yourself, Bert. It's not as hard as you might think and if you get stuck maybe I could give you some tips. Anyway, you ought to try it some time. VK3ZFC, this is VK3ZOM mobile off and clear and closing down. Cheers, Bert. I'll work you mobile later when I've shifted the car back to this end of the drive. VK3ZOM mobile closing down. Cheers.

— . . . —

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"CQ" W.W. DX CONTEST

PRECIS OF RULES, 1967

Dates: **Phone**: October 21 0000 hrs. GMT to October 22 2400 hrs. GMT. **C.W.**: November 25 0000 hrs. GMT to November 26 2400 hrs. GMT.

Bands: All authorised frequencies between 1.8 and 29.7 Mc.

Cyphers: RS/RST plus zone. (30 Eastern Australia, 29 Western Australia).

Scoring: QSO point value: (a) 3 points between stations in different continents; (b) 1 point between stations on same continent but in different countries; (c) contacts between stations in the same country are permitted for zone and/or country multiplier but have NO QSO point value. Multiplier is determined by the number of zones and countries worked on each band.

Final score: (a) single band, zones plus countries multiplied by QSO points; (b) all band, sum of zones and countries from each band multiplied by total QSO points of all bands.

Divisions: (a) Single operator, all bands OR single band; (b) multi-operator, single transmitter, all band only; (c) multi-operator, multi transmitter, all band only.

Logs to go to "CQ" World Wide DX Contest, 14 Vanderventer Ave., Port Washington, L.I., N.Y. 11050, U.S.A.

VHF

Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic., 3034

N.S.W. V.H.F. AND T.V. GROUP

The current v.h.f. topic is the work in progress at Dural. The new 2 mx array comprising four 10-element beams in quadrature is laying down a mighty signal. Reports of satisfactory reception have been received from Canberra, Newcastle and several points west of Sydney. Plans are in hand to increase the transmitter efficiency and this should help raise the signal level in some of the more remote regions. Further 2 mx improvements are in progress including the construction of a converter less prone to cross-modulation.

On 6 mx Dural now sports a new antenna for 53.866 Mc. This antenna, made and donated by George 2ZDR, is a coaxial dipole. The tip of the new 6 mx antenna is approximately 67 feet above ground, just below the two metre array. At a later date ground-plane radials will be added to this antenna. A worthwhile improvement has been noted in the 6 mx coverage from VK2WI, one contact being with VK2ZVL mobile in the main street of Newcastle. Keith at the time was radiating four watts of r.f.

While the direct coverage from Dural is being gradually extended, we must thank those stalwarts who front-up every Sunday to relay these broadcasts on u.h.f. and to the more sheltered areas. Owing to the sheltered nature of the Wollongong Amateurs, the coverage to date has been rather scratchy. However, things may improve as VK2AND has volunteered to set up on 144 Mc. and relay back to Wollongong on the Illawarra net frequency of 53.982 Mc.

Any districts not directly, or indirectly, covered by the v.h.f. broadcasts, and who would like to hear them regularly, should contact the V.h.f. Group Secretary, Norm 2ZXC. It is possible that we may be able to organise a relay or if tape recorders are available a weekly exchange tape of the broadcast.

The 6 mx event of August was the visit to Sydney of John FK8AB maritime mobile. John was operating on 52.1 Mc. and tuning 52 to 54 Mc., especially listening to the 6 mx net frequency. For those who would like to work John, he has only two transmitting frequencies, 52.050 and 52.1 Mc. Whenever his ship, Nickel One, is in Australian waters he will be active on 6 mx. John will also be active whenever he is in his home port of Noumea.

How many New South Welshmen worked the 6 mx DX during the Scouting Jamboree on Saturday, 5th August? During the pouring rain in the afternoon, VK4s and VK5s were heard at S9 levels, but only working each other not VK2s. Six metre DX sure pops up at the most unexpected times.

Talking of DX. It would seem that one Sydney station is getting set up for the 2 mx DX season this summer. Ross 2ZRU was recently heard testing his new 2 mx s.s.b. exciter and talking about the linear coming up. As Ross has a 60 element array, the locals will hardly miss his signal.

Finally, if these notes appear in time, don't forget the combined car trial and fox hunt on Sunday, 8th October. The fox will be 2ZAU, operating frequency for the hunt being the 53.866 Mc. a.m. net. 73, Keith 2ZAU.

VICTORIA

Activity in Victoria is still at rather high level. In Melbourne some 20 new stations have appeared on 2 mx. 6 mx is still very popular with most activity during commuting times and at week-ends. Although no DX reports have been received, there have been frequent contacts betwen Melbourne and the Northern Country areas.

The VK3 V.h.f. Group converter project is well under way and by the time you receive this "A.R." there should be quite a few units in service. Converters for 2 mx and 432 Mc. also fully transistorised are in an advanced state of development.

Copies of the VK3 Field Day rules and scoring can be obtained from the V.h.f. Group. Any readers requiring further information of the VK3 V.h.f. Group's activities should write to the undersigned or the Secretary V.h.f. Group, P.O. Box 36, East Melbourne, Vic., 3002. Until next month, 73, Cyril 3ZCK.

4th Annual V.h.f. Convention: The VK3 V.h.f. Group will hold its 4th Annual Convention over the week-end of 7th and 8th October, 1967, at Geelong. The V.h.f. Group and the Geelong Amateur Radio Television Club have combined to organise and arrange the programme for this year's Convention. Don't forget the dates: Saturday and Sunday, 7th and 8th October, for the V.h.f. Convention.

Coming v.h.f. events in VK3, Oct. to March:

Sat./Sun., 7th and 8th Oct., V.h.f. Convention.
Sun., 15th Oct.: 1st V.h.f. Field Day.
Sun., 15th Oct: 2 Metre Scramble.
Wed., 18th Oct.: V.h.f. Group Meeting.
Wed., 25th Oct.: 2 Metre Fox Hunt.

Sun., 12th Nov.: 2 Metre Scramble.
Wed., 15th Nov.: V.h.f. Group Meeting.
Sun., 19th Nov.: V.h.f. Field Day.
Wed., 22nd Nov.: 2 Metre Fox Hunt.

Sun., 10th Dec.: 2 Metre Scramble.
Sun., 17th Dec., V.h.f. Field Day.
Wed., 20th Dec.: V.h.f. Group Xmas Party.
Wed., 27th Dec.: 2 Metre Fox Hunt.

Sun./Mon., 31st Dec./1st Jan.: VK2/VK3 Field Day.
Sun., 14th Jan.: 2 Metre Scramble.
Wed., 17th Jan.: V.h.f. Group Meeting.
Sun., 20th Jan.: V.h.f. Field Day.
Wed., 24th Jan.: 2 Metre Fox Hunt.

Sun., 11th Feb.: 2 Metre Scramble and National Field Day.
Wed., 21st Feb.: V.h.f. Group Meeting.
Wed., 28th Feb.: 2 Metre Fox Hunt.

Sun., 10th Mar.: 2 Metre Scramble.
Sun., 17th Mar.: Final V.h.f. Field Day.
Wed., 20th Mar.: V.h.f. Group Meeting.
Wed., 27th Mar.: 2 Metre Fox Hunt.

Eastern Zone: Nothing special to report from the Gippsland area. No Es openings observed, and each 28-day cycle is better than the one before and gives a monthly peak average of 26-32 Mc., and often goes as high as 39 Mc. to the Pacific. The boys in the Zone are getting ready for the coming DX season and are looking for 2 mx a.m. and s.s.b. contacts after 2100 hours each Sunday evening. 73, George 3ZCG.

SOUTH AUSTRALIA

It is apparent that the majority of operational v.h.f. enthusiasts in VK5 are ardent contest seekers. The support given to the most recent R.D. Contest was extremely gratifying. Many fine scores were noted on the v.h.f. bands especially those of 5ZTS, 5ZXR and 5ZUL, who spent a considerable amount of time on the bands.

Considering that Limited licensees are now added into that complex arithmetical state scoring formula and providing that all the respective logs are submitted to the F.C.C. by the VK5 v.h.f. operators the State Trophy may again become the property of the VK5 Division for the ensuring year.

Of late Rod 5ZSD ex 6ZDS has been airing his gear as he progressively unpacks his equipment. Barry 5ZMW is also currently refurbishing his gear with an elaborate system of linear amplifiers for both 6 and 2 mx, utilising QB3s, for use with his s.s.b. exciter. Numerous other Ham shacks are undergoing changes for increased radiated power.

Local activity has been reduced due to the spate of building, nonetheless all for a good cause. Continuing, however, is the daily schedule between Herb 3NN and Mick 5ZDR to evaluate the propagation characteristics between 144 and 432 Mc. 73, Colin 5ZHJ.

WESTERN AUSTRALIA

One of the best ever junk sales, with Roy 6RY with the hammer doing a sterling job, should stimulate further activity. Several V.h.f. Group members completed their fox hunt gear or added to it. Valves sold suggested power increases were contemplated in some stations.

Laurie 6ZEA is going to Dirk Hartog Island (near Shark Bay on the W.A. coast) with an expedition party of 30 boys from Wesley College. The party will split into four groups, linked by radio with Laurie as chief operator. He hopes to set up gear on 6 mx and is optimistic of making contacts from this radio dead spot.

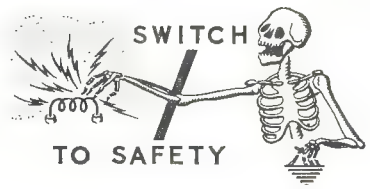
Activity on 6 and 2 mx continues mainly on the 6 mx a.m. net, 52.586 Mc. (crystal frequency 8764.444 Mc.). Two metres is a good band and not difficult to build gear for—we should make more use of it in VK6. 73, Laurie 6ZEA.

TASMANIA

Not a great deal of news this month as activity is at a low ebb at the moment. It would be greatly appreciated if all correspondence for "A.R." is received at my address, Flat 6, 7 St. George's Square, Launceston, 7250, by the 24th of every month as these notes have to be in Melbourne by 28th of each month.

6 Metres: Activity on this band is mainly confined to the 53.035 Mc. a.m. net frequency. At the time of compiling these notes, no DX has been reported to me.

2 Metres: Activity on this band has been very low this month. This could be due to the cold weather we have had lately, but should pick up as the warmer weather arrives. Bevan 7ZBW has recently acquired some 2 mx f.m. equipment and is operating on Channel A and B. So you Melbourne f.m. enthusiasts keep an ear open for Bevan when he points his beam in Melbourne's direction.



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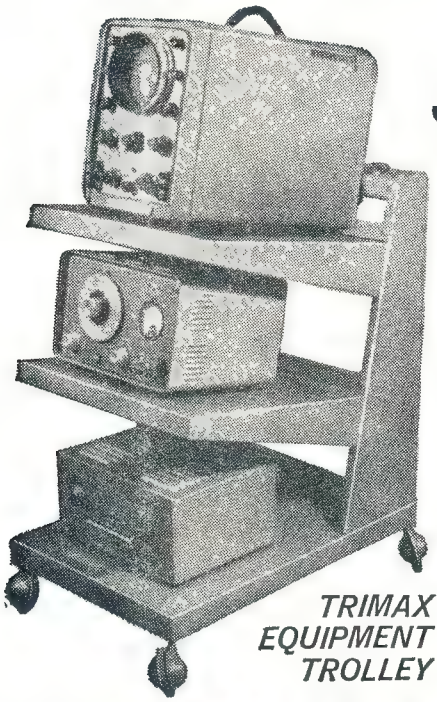

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SWL

Sub-Editor: D. GRANTLEY, WIA-L2022
P.O. Box 222, Penrith, N.S.W., 2750

The R.D. Contest was the major activity for many listeners during the month of August, and excellent conditions once again prevailed. There were many VK6s and VK9s to help the scoring along and some good logs will be submitted.

We look forward to our next contest which will be the VK/ZL World Wide DX event to be held over two week-ends in October. Details have been published in "A.R." and you are advised to pay particular attention to the rules covering the Receiving Section. It is a very interesting contest, with a very high scoring rate and there is always plenty of good DX to be found.

VK3 Divisional News: The VK3 S.w.l's found the R.D. Contest slightly different from other years. The Melbourne boys appear to favour the club station approach rather than entering the single operator section. The boys on a.m. receivers had a lean time, as most of the stations heard in Melbourne were on s.s.b. and if you could not resolve it you missed the majority of stations.

The elections for office-bearers for the next twelve months will take place at the September meeting. If you have missed out on attending meetings during the year you will not have seen demonstrations of teletype equipment, v.h.f. f.m. reception, tunable i.f. receivers, lasers, Project Australis and the use of Aegis coils, so remember fellows, the lectures for the rest of the year are as interesting as those which have been given previously.

VK2 Divisional News: Once again I have no official news from this group, and the only report I have is that attendances at the meetings have been very poor, and that any suggestions for the advancement of the group will be appreciated. I did hear in the broadcast that visits to such places as the O.T.C. Doonside are proposed in future. I can report, too, that all cards received at the bureau have been despatched.

DX NOTES

The best news we have had is the appearance of Don Miller from Rodriquez Is. as VQ8CBB. After a long hunt I managed to log one of his QSOs. It must have been very helpful to this DX-pedition to have a VK2 signal come up on their frequency calling CQ.

W3DWG/VR6 is on the bands, QSL via G3DO for those outside the States. GC2FMV has been on the 20 mx band s.s.b. quite regularly around 5 p.m. E.A.S.T. He is on Jersey.

CR6GO is on leave and operating from /CT1. ZD7DI was working into Sydney recently. His QSLs go via the R.S.G.B.

Want some good Morse practice? Then look for KH6AFS who has one of the best transmissions I have heard.

AROUND THE SHACKS

Peter Drew is down at Balcombe Sigs School. Using an Eddystone EC10, Peter has made a slather of the R.D. Contest and recorded some very fine DX as well. On 7 Mc. c.w. Ws, JAs, VE3DZV, UW0FP, KH6EPW and on s.s.b. KH6FLY/MM, KC4USN, HK6AWX, HK3OJ, HC1BY, OA4NXS, OA4GQ and G3AOO. On 14 Mc. c.w. KH6CLJ, YO8DD, UA9KCA, and s.s.b. SM5YV, LX1RB, GI3JIM, TG9OP, HR1KAS, CT1BT, FO8BW, EA8CB, UC2BF, GB3BSI, VE0MZ, VP9FC, 5W1AS, DU1FH and many others. Only other loggings by Peter were on 21 Mc. where he logged FB8XX on c.w., ZS2OM, ZE2JA and KR6BF on a.m., with ZS5FF, KX6BU, FK8BK, VK0CR, VK9VM, CR7FM, KA9MF, ZS6KC and ZS4K on s.s.b. Ws have been noted on 20 at 1130 to 1300 hours GMT.

Eric Trebilcock has logged his usual issue of good 'uns. VP1MW (Box 554, Belize) and W2NAU/MM were amongst the doings on 7 Mc., YV5ACP, HK3BAE, KP4BBN, HK7XI and ZD8J were the best on 14, whilst it is pleasing to note that Eric logged 30 Europeans on 3.5, a band which frequently reveals much hidden c.w. DX in the very early hours. 387 cards in 81 countries and 31 zones are his tally so far this year, the latest being from FO8BJ, FO8BT, KR6KJ, W7DEL/KS6, OE2HVL, TI2PZ, VP2MK, VU2GW, VU2JA, VU2DIA, ZB2AX, ZS6JK, 9V1NV and 9M4LP.

Some of the more interesting calls I heard on 20 mx c.w. were LA4NR, YN1MO/W4, EA8CG, VQ8CBB, KX6FM, FB8YY, UQ2CQ/UA0, CR6GO/CT1, XE1AAN, ON5ZO, FM7MO, VS9MB, GI3RXV, CT3AS, CO2FM, VR4CR, LU4DGP, 4X4CJ, TG9EP, TJ1QQ and HB0ADH. Whilst on s.s.b. EA3NI, CR6IK, TG9EP, ZD7DI, YS1SRD, VK0GP, ON8XA, OH2OI, 5N2AAX, CT1SO, YS1AG, GC2FMV, OX3WX, 5Z4KL and VQ8CBB. A lone a.m. station was CT1NW. The 20 mx band has been outstanding at this QTH, the Europeans being heard nightly at around 7 p.m. our time, and still coming in 12 hours later.

Ernie Luff has logged the following on 20 mx s.s.b.: UA6XG/P, LA8NK, LU9DM, ZS3HX, ZS6YE, ZS5FY, UW0AH, UA1CK/JT1, ZL5AC, CR7CO, ZS6AIP, EA3NI, KL7FAY, CT1EE, SM7TE/M, VE0MZ, EL2AC, 9L1KG, 4U1ITU, KP4AST, EI2BG plus the usual Gs, etc. Inward QSLs are K9JJR, ZS4F, CX9CO, CN8BF, CX9AAN, VR3L, KV4EY, VK2AXS, OY7ML, 3C3ELA, UP2NV, UA3CT, DL8KG, JA2GZ and JA1OCA, the latter two being for 15 mx.

Finally, from Mac Hilliard comes news that the 10 mx band is on the improve, with strong signals coming in from West Coast U.S.A., DU and JA, plus a good signal from PY2AJE.

Well chaps, that winds it up for this month. In the meantime all the best in the VK/ZL, de Don L2022.

☆

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

FOREIGN OPERATION

Editor "A.R.," Dear Sir,

I have been advised per medium of "Dialog," official magazine of the International Amateur Radio Journalistic Society, that following efforts by Cliff Evans, K6BX, creator of C.H.C., Chairman I.A.R.J.S., etc., liberalisation in operating procedures has been effected in the aftermentioned European countries.

Amateurs visiting Hungary can now obtain permission to operate using their own call /HA5. It is not necessary that one's own country has a reciprocal licensing agreement with Hungary. This country's action is unilateral with no strings attached. It is simply a person to person goodwill action.

Also nationals of all countries visiting Yugoslavia may obtain YU7 calls and operate freely without any requirement, or any bi-nation treaty.

Poland, too, has announced similar actions and relinquished need for any reciprocal treaty.

Gs who have mobile permits may now operate /M while touring Hungary and Yugoslavia.

It is also permissible now that visiting Hams or any Hungarian may send third party messages to Hams elsewhere in the world and vice versa. Same applies to Yugoslavia.

Ham Radio moves one step further ahead.

—Alan Shawsmith, VK4SS,
Third Vice-President, I.A.R.J.S.

☆

YOUTH RADIO SCHEME

Another month has gone by in the Y.R.S. and things are really getting into gear with more and more boys becoming interested in radio. The club leaders are doing a magnificent job in keeping the movement going. The Correspondence Section fills a very big gap in the Y.R.S. and special thanks should go to past and present leaders of Correspondence Groups. Without these men, some being former Y.R.S. students, a large number of boys would be without a fascinating hobby.

The new issue of the N.S.W. Newsletter has been received and is full of news and information. This is a very good effort by the committee and represents much time and co-operative effort. Rog VK1RD has resigned from producing the Newsletter due to the many pressures of the work involved in being Supervisor of the Correspondence Section.

A note of interest is that the Intermediate Syllabus has been revised and now follows the Junior Syllabus a little more closely.

CLUB NEWS

VK1: Canberra Y.R.C. has had 14 out of 17 students pass the Elementary recently. These will go on to the Junior Certificate while a new class is being formed for the Elementary.

VK2: There are six new club registrations. Welcome to Newington College, Scone High, Marist Brothers High, Sydney Teachers' College, Lyneham High, and Dee Why. There are now 31 active clubs.

Westlakes R.C.: David Fraser has received the call sign of VK2ZYK and is one of the few high school students to reach this coveted ambition.

VK3: A general meeting of all member clubs and correspondence members was held recently with over 30 members present representing 60 per cent. of the clubs.

VK4: Bundaberg.—The boys are still working on their 3w. amps.

Maryborough.—Office-bearers are President, Paul Russel; Secretary, Ken Ashford; and Treasurer, Ken Widdeys. The club has some solderless assembly crystal sets working very well. There is also a 50w. station operating regularly from here as VK4NN and can be heard on the net the first Saturday of the month at 9 a.m.

Gympie.—There has been some local newspaper publicity for Y.R.S. resulting in three new members.

Clontarf Beach.—Some successful experiments are being done with modulated light beams and some good distances have been achieved.

73, Mona.

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INTRUDER WATCH SERVICE

You have already heard about a W.I.A. proposal to inaugurate an Intruder Watch Service in Australia in line with similar activity being carried on in Regions I. and II. these past few years.

Why do we need an Intruder Watch? In theory we don't! In practice we shouldn't! But in fact we need one because countries DO radiate transmissions in the exclusive Amateur band frequency assignments—sometimes in defiance of International Telecommunciations Union (I.T.U.) conference agreements, and sometimes because the countries concerned are non signatory to I.T.U. agreements.

In respect of the latter, Administrations can only do their best to negotiate with the country concerned for the removal of the offending station to an out-of-band frequency; but in regard to the former it should be possible—and indeed a reasonable expectation—that an Administration will negotiate for the removal of unauthorised transmissions from Amateur band assignments in the same way as they would act to have interference to commercial services corrected.

There are, of course, problems in the case of the Amateur Service. Firstly, we have multi-frequency assignments in a number of bands throughout the frequency spectrum as compared with fixed frequency allocations in the case of the commercials. A report of interference to a commercial transmission can bring prompt action because only one frequency is to be monitored and dealt with. On the other hand, interference to the Amateur Service concerns a frequency assignment complex which is difficult to imagine will be monitored 24 hours a day.

This is where the Amateur and Short Wave Listener can play an important part in effectively monitoring Amateur frequencies, and with a standardised and co-ordinated reporting system, assist the Administration in the problem of removing unauthorised transmissions. In Regions I. and II. this system is known as the **Intruder Watch Service** and it works to the advantage of the Amateur Service and the various Administrations concerned.

The W.I.A. believes the Australian Administration will co-operate in such a system if accurate information can be directed to its monitoring stations.

The British Post Office (U.K.) and the Federal Communications Commission (U.S.A.) co-operate expertly with the Amateur Service representative society on this problem in these two regions. We confidently expect the same co-operation will exist in Australia.

Basically the A.R.R.L. and the R.S.G.B. have the same system of monitoring, recording and reporting. The A.R.R.L. uses a triplicate carbon copy system wherein the original copy goes direct to the F.C.C., the second copy to the A.R.R.L. headquarters, and the third copy is filed by the Intruder Watcher making the report. The R.S.G.B. uses separate forms to achieve the same recorded details of interference.

The American system places the responsibility for accurate reporting on the appointed watcher who forwards the appropriate completed form directly to the F.C.C. at the same time telephoning the information to the nearest monitoring station. The R.S.G.B. system, on the other hand, correlates the reports from its watchers and forwards a comprehensive report on a special form to which is attached a copy of "traffic" handled by the interfering station. Both Societies circulate regular information bulletins and lists of known intruder transmissions to the members of their Intruder Watch Service.

The W.I.A. Federal Executive has collected all the information on the systems used overseas. From this information will be formulated a satisfactory system suitable to Australian conditions. Before the details are worked out, however, we need to have an organisation to back the system. We will no doubt have little trouble in obtaining the services of officers within the Divisions for the correlation of the detailed information. But the system won't "get off the ground" without a considerable number of Amateurs located at many points around the Commonwealth prepared to devote a reasonable amount of time each day to monitoring interfering transmissions and accurately filling in the appropriate forms which will be supplied by the W.I.A.

This is where YOU—the Amateur and S.w.l.—can play your part in protecting your own bands. David Wardlaw, VK3ADW, has been appointed Federal Operations Officer of the proposed Intruder Watch Service. Can you assist to get this project under way? If so, please drop a note in the mail addressed to:—

D. Wardlaw, VK3ADW,
Intruder Watch Service, W.I.A.,
Box 2611W, G.P.O., Melbourne, Vic., 3001.

Remember, you don't have to be a licensed Amateur! We would like to encourage S.w.l's to also participate in this useful service. If you are interested, ACT now!

—G. Maxwell Hull, VK3ZS,
Federal President, W.I.A.

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FEDERAL QSL BUREAU

The Milan Radio Club sends details of its Milan Award available for contacts with members of the Club or with stations in the Province of Milan. Club members count 2 points and Province stations 1 point. DX stations must earn 10 points for the award. Applications together with 8 I.R.C. to the Awards Manager, I1RCD, Cleato Realini, Via Rimini 13, Milan, Italy.

The L.P.R.A. Panama advise a change of address for all correspondence including the QSL Bureau. The new address is P.O. Box 9A-175, Panama 9A, Republic of Panama.

The new Inward QSL Manager for the Queensland Division is Tibby Scholz, VK4HR, 95 Stephens St., Morningside, Brisbane, Qld., 4170. Tibby was appointed on the recent demise of our old friend and colleague, Jack Files, VK4JF. Jack held the job down for a score of years, giving the job his undivided attention and knowledge and extending the maximum of co-operation to all his fellow QSL Managers.

Results of the 1966 All Asian DX Contest are just to hand from the J.A.R.L. Australian award winners listed are VKs 3AXK, 7SM, 3APJ, 3ABA, 2APK, 9CJ and 9GN.

Traffic through the Federal Bureau for August again increased to over 11,000 cards. Obviously the slump in June was caused by the diversion of shipping from the Suez route to the Cape, as a consequence of the Middle East conflict. While the R.S.G.B., N.Z.A.R.T., S.S.A., D.A.R.C. and some other Bureaux are observing the new VK QSL arrangements, other Bureaux from which big consignments are received, are so far ignoring the instructions. Forceful reminders have been sent to the J.A.R.L., the A.R.I. and Box 88, Moscow.

VK3ZMI was the first applicant for the 1966 "CQs" mentioned in these notes in August.

—Ray Jones, VK3RJ, Manager.

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NEW SOUTH WALES

COUNCIL NEWS

The President and Councillors have been meeting more frequently than usual, and in the last few weeks working parties of Councillors have been systematically, with the aid of the newly appointed Secretary (Mrs. Long) and Councillor George Wilson, virtually re writing all the records and completely reorganising the Division's office services. A systematic filing system is being completed and the banking procedures have been completely overhauled. Ken Finney says that following the appointment of a Secretary, "a new look" Division will emerge.

SILENT KEY

It is with deep regret that we record the passing of the following Amateur:

Ex-VK4CW—Jack Worth.

The formation of the Federal Company will mean that the Division will need to be very efficiently run, and N.S.W. will be ready to accept and handle the requests of this organisation with promptness and accuracy. The re-organisation will result in the issuing of back Membership Certificates and members should receive these soon. The issue of Certificates will in future become automatic as the system catches up with the backlog. Council has said that the membership drive is encouraging, but that there are still many more non members and as a challenge Council has suggested a target of 2,000 members this year.

The taped lecture service has now been handed over to the Secretary and all enquiries for the tapes should be sent to the Secretary for attention. The service has 43 lectures on tapes, some of which are illustrated with accompanying slides and country and interstate clubs and divisions are invited to use this service. The Morse tape service is a separate set-up and is handled by Ern Hodgkins, VK2EH, Mangrove Rd., Narara. Ern has 180 tapes in circulation. Don't forget to give details of the speed of YOUR recorder, number of tracks and enclose 25 cents for postage. You can, if you prefer, send your own tape, but allow time for Ern to copy for you.

The President reports that the Bulletin and the General Meetings will in future contain a report of Council activities in order to keep all informed of the Division's happenings and provide details of future events. A minimum of business will be handled at meetings with the emphasis more on lectures and rag-chewing.

BULLETIN EDITORS

Council has received the notice of resignation of the Bulletin Co-Editors from this position after the publication of the October issue. Gerry Sabin and Warwick Johnstone have both done this most important task for the last five years and have decided to pass on this job to two new Editors. Both Gerry and Warwick are involved in other Institute work which occupies a fair amount of their time. Council very much appreciates the past efforts of these Co-Editors and is seeking to find two Amateurs to take over the job. If you feel you would like to take a more active part in Institute affairs then here is a position to fill your need.

EDUCATION OFFICER

Harold Burtoft, the Education Officer, has asked to be relieved of his position after Christmas. Increasing private commitments are causing Harold to find it difficult to carry on in this position which he has run for the last seven years. Council is seeking someone to take over this position from Harold.

AUGUST GENERAL MEETING

The August general meeting was held at Wireless Institute Centre on Friday, 25th, being opened by President Ken Finney at 8 p.m. Ken gave a fairly comprehensive report to the meeting of the activities of Council and the Secretary. The President then gave the results of a questionnaire which was given out at the meeting last month in order to find out the members' choice of lecture topics. The results were as follows:

Antennae 39 points (14 per cent. of total), transistors 33, solid state r.f. 27, test equipment 25, v.h.f. 24, mobile gear 20, s.s.b. building 20, television 18, receivers 17, transceivers 17, s.s.b. theory 16, crystals 13, r.t.t.y. 10, DX and predictions 4 points. Total 283 points.

A further batch of forms was handed out to this meeting, but the results will not be known until later. The lecture being on r.t.t.y. will no doubt influence the result.

The President then introduced the lecturer, Mr. Pat Bennett, who spoke on r.t.t.y. Mr. Bennett had teleprinter machines set up coupled to a tape transmitter and showed how the machines go. Mr. Bennett had some very good slides and with his very easy to understand lecture the audience were quite engrossed in this r.t.t.y. and its possibilities. At the conclusion of his lecture Mr. Bennett was asked many and varied questions, and these showed that those present were very keen, and that r.t.t.y. is quite an attractive adjunct to Amateur Radio and could prove to be very popular in the future, depending on the release of

suitable machines to the Amateur ranks. The vote of thanks, duly carried, was moved by Bill 2AGF who apologised for the absence of the President and Council (they were meeting on urgent business) and the meeting then was formally closed by Bill on behalf of the President.

1968 CONVENTION

As announced earlier, the Convention will be held over the Australia Day holiday week-end at the end of January. Further details are to hand regarding the Annual Dinner, the cost of which has been firmly set at $4.50. Dress for the occasion is lounge suits. Full details will be published in the Bulletin and in later issues of "A.R." when all details are finalised. A field day will be held but no details have been decided on yet except that Ken Finney says it will be different.

W.I.C.E.N.

Sunday the 20th saw some 30 odd cars and 70 Amateurs and XYLs spend the day at Dural Transmitter, erecting the much talked about tower for the antennae. Unfortunately, the tower was not originally dismantled by anyone present so the task of re-assembly was difficult. Considerable ancillary work was carried out as well and the work was not completed until 7 p.m. or so. Specially designed antennae for the W.I.C.E.N. net transmitters are to be fitted to the tower shortly.

The room for the Communications Centre at Atcheson St. is almost complete and along with the renovation of the lower floor this area is now beginning to look sensible and tidy. 73, Stan 2ZRD.

CENTRAL COAST RADIO CLUB

August appears to be a month of activity for the Central Coast Branch. The usual monthly meeting was held on Friday, 18th August, but with a most interesting lecture from a Newcastle Amateur. Mr. Ian Fyfe, VK2ZIF, described his single sideband transistor transceiver. In keeping with the components, the size of the unit was a mere 7 x 6 x 3 inches. A very thorough description of the unit was given, with the assistance of an oscilloscope to illustrate wave forms.

The lecture ended with an active question and answer session, and the issue of printed sheets on the transceiver.

HUNTER BRANCH

The September meeting of the Branch, held in the Technical College, was well attended to hear Lionel 2ZLD speak on the design and manufacture of printed circuits in the shack. Apologising for his recent efforts with bright dip, that wonder chemical which cleans any metal and clears any classroom, Lionel gave a most informative discourse on all Amateurs need to know about making their own circuits, both simple and complex. Lionel achieved something which many lecturers hope for but seldom reach, that of audience participation in the display. Lest you think that some of our young lads were dispatched to the etch bath, let me reassure you that the participation was in the form of assistance with the design of a simple circuit to be made on a 2½ by 3 inch board. Quite a deal of discussion ensued and the final design was the joint effort of everyone in the room.

Surrounded by the tools of his trade, including an electric radiator, several large plastic containers, cans of spray, chemicals and butane gas, not to mention stencil knives and the rest, Lionel made short work of painting the design and etching the circuit while the lecture was in progress. Even the old men of printed circuits, Ian 2ZIF and Tony 2ZCT, reported that they had learned something new and everyone went away delighted after carrying with acclamation the vote of thanks moved by Bill 2ZWM.

During the business section of the meeting, President Frank 2ZFX outlined the programme for the Field Day to be held this year at Bolton Park on Lake Macquarie on Sunday, 15th October. A full programme of hunts and a scramble for Amateurs and S.w.l's as well as events for the ladies and entertainment for the children have been arranged and this day looks like being another winner for the Branch. Henry 2ZGK, that well known cooker of hamburgers, has decided to extend his field of endeavour this year and provide a midday meal for all attending the ground. The cost of this will be included in the registration fee for the day of $1 per adult male or $2 per family ticket, including children under 14. Children over 14 and any unaccompanied children will be charged 50c for registration.

Activities will commence with a 2 mx fox hunt following registration from 0930 to 1015. The hunt will end at 1055 in time for the broadcast from 2WI, and the next event, a 40 mx hunt will commence at 1135 and end at 1230. A lunch break will be made from 1230 to 1330 and the first afternoon event will be an all-band mobile scramble from 1335 to 1415. At 1430 and lasting till 1545 a marathon three-transmitter 2 mx hunt will be held and prize giving will be made at 1615. During the day, pedestrian fox hunts and novelty events will be run, in addition to the usual quizzes. Some liquid refreshments for the thirsty hunters will also be available. Registration for the event may be undertaken at any time prior to or on the Field Day and all details may be had from Gordon 2ZSG, 15 Marine View, Newcastle, N.S.W., 2300.

Since the installation of the new mast and co-linear aerial for 2 mx f.m. at the Westlakes Radio Club, Teralba, signal reports from many parts of Newcastle have been most encouraging. It appears that, except for some shadowed areas, a good overall coverage is now possible. This will mean ideal conditions for relay of the Hunter Branch broadcasts from and to the club.

Activity on the bands during the R.D. Contest was quite good and some seldom heard call signs were evident. Jan 2BJO operated the 2AWX rig and made 111 points, while several other calls including 2AHA/MCW (standing for mobile c.w.!) were busy at it.

And amid all this activity, there must be some who have made something new and delightful during the year. Well, here's your chance to air the design and building at the October meeting of the Branch to be held in room 6 of the Clegg Building, Newcastle Technical College, Tighes Hill, on Friday, 6th October. This is the annual home-built equipment competition and Branch members are invited to take part for a prize to be given at the Field Day. So come along and join in the merrymaking with such as I who will be describing my one transistor amplifier built in a matchbox. Oh! and you won't forget the Field Day will you. See you, 73, 2AKX.

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VICTORIA

The August meeting of the Victorian Divisional Council was held on Monday 28th. Apologies were received from John Beckett, VK3FE, and Mike Owen, VK3ZEO. Members arriving early were greeted to a steaming hot cup of coffee from a hot drink despenser which is of a similar type to one which the Division has decided to buy to ease the problem of refreshments at functions at the Divisional rooms. Another improvement at general and v.h.f. meetings will be the addition of additional chairs which will increase the seating accommodation.

The W.I.C.E.N. representative reported that the first of the vehicles is almost completed and the second has been started. At the present rate of installation both vehicles should be available well before the coming summer season.

The Division's Annual Dinner will be held on Friday, 3rd November, at the Oriana Room, McClure's Restaurant, St. Kilda Road, Melbourne. The charge of $5.50 per head includes pre-dinner appetizers, the dinner and the services of a band for those wishing to dance. Don't forget, Friday, 3rd November, the Victorian Division's social event of the year. Until next month, 73, Cyril VK3ZCK.

VICTORIAN DIVISION, W.I.A.

ANNUAL DINNER

will be held on

FRIDAY, 3rd NOVEMBER

in the

ORIANA ROOM

McCLURE'S RESTAURANT

454 St. Kilda Road

Price: $5.50 per head

Reservations: Contact the Admin. Secretary. Phone 41-3535.

CONTEST CALENDAR

7th/8th October: VK-ZL-Oceania DX Contest (Phone Section).
7th/8th October: W.A.D.M. C.W. Contest.
14th/15th October: VK-ZL-Oceania DX Contest (C.W. Section).
14th/15th October: R.S.G.B. 21/28 Mc. Telephony Contest.
21st/22nd October: "CQ" W.W. DX Contest (Phone Section).
28th/29th October: R.S.G.B. 7 Mc. DX Contest (Phone Section).
11th/12th November: R.S.G.B. 7 Mc. DX Contest (C.W. Section).
11th/12th November: OK C.W. DX Contest.
25th/26th November: "CQ" W.W. DX Contest (C.W. Section).
9th Dec. 1967 to 14th Jan., 1968: Ross Hull Memorial V.h.f./U.h.f. Contest.

EASTERN ZONE

Here we are again with the zone notes. I regret having to start on a sombre note. We are sorry to note the passing of our ex-zone member, Ross Bennett, VK3NS, of Doncaster (ex VK3ZAQ of Warragul). Zone members were active in the Jamboree on the Air, they were 3BB, 3AED, 3ZCG (from Morwell); 3QZ, 3ZAB (Traralgon); 3AWU (Yallourn). Quite a few members took part in the R.D. Contest.

Harvey 3ZWH is leaving the zone for VK4. One zone W.I.C.E.N. co-ordinator, Graham 3QZ, and Bert 3BB were invited to the local State Disaster Plan meeting on 23rd August. Our President 3ZCG attended the communications meeting associated with the Disaster Plan meeting on 31st August. Any news boys? Please let's have it. 73, Albert Cash, L3289.

WESTERN ZONE

Bill 3ZAX is still writhing under the indignity of a bent antenna guide pole—commiserations OM. V.h.f. bands are very active as usual. This has led to considerations of forming a v.h.f. club in the area for Hams and interested S.w.l's. Also worthy of note was the use of v.h.f. bands for the recent Jamboree of the Air. Taking part were Tony 5ZAI, Bill 3ZAX and Gavin 3AEJ. Judging by the number of boys who turned up at 3ZAX's QTH, it was quite a popular concern. I have no contact on h.f. bands at present but can assure readers we are slowly converting them to v.h.f. Good to hear Bob 3ARM on 6 mx! However, we do long for the day when we are proficient on c.w. Must QRT—new QSL cards won't send themselves. 73, Jim 3ZMS.

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QUEENSLAND

IPSWICH AND DISTRICT RADIO CLUB

News for this month seems to be a bit scarce, possibly because I have spent most of this month in other call areas of VK and have not been in touch with local club members. However a little news has come to hand since I returned.

We were all sorry to hear of our Public Relations Officer's bout of the 'flu and hope he is well on the way to recovery by now. He was still able to send news to VK4WI so that proves he was still on the job—wog or no wog.

On my return to the club meetings, a lot of new faces were seen and looks as if the club will be gaining more new members—the more the merrier.

It was decided that with the coming of summer, the club's 80 mx Monday hook-up at 8 p.m. will have to be abandoned soon. The QRN will soon make 80 mx impossible to work, and a new band for the hook-up has been discussed. The eventual outcome seems to be settled on 144 Mc. and club members are now building and renovating the 2 mx gear which has been hanging around gathering dust.

A possible get together between Ipswich and Bundaberg Radio Clubs has been mentioned to take place in the near future as a camp out week-end at a spot some half way between Ipswich and Bundaberg. This has been met with a lot of enthusiasm from our end and final arrangements and announcements will be made when all is finalised. This could be the forerunner of a closer bond between the two Radio Clubs and we hope the first of many more such get togethers.

The t.v. station at Bunya Mountains was invaded by several of our club members not long ago, strictly an informal visit. No t.v.i. problems, but it appears they were made very welcome by the tech. on duty who lives alone at this remote location and greeted the company to relieve the monotony. 73, Warren 4GT.

CRYSTAL PRODUCTS

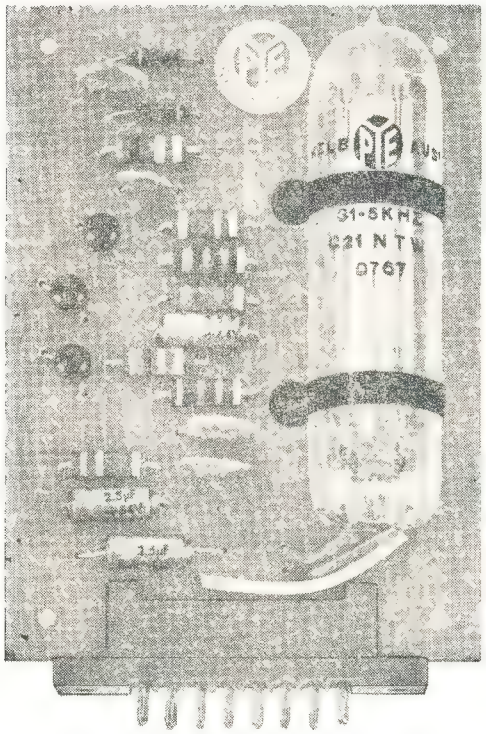
QUARTZ CRYSTAL OSCILLATORS

Pye Pty. Ltd. engineers are designing a Series of Stable Crystal Oscillators within the range 1.5 Kc. to 100 Mc.

Range: 1.5 Kc. to 100 Mc.

Types now available are:—

XL687 .... 1.5 Kc. to 6.0 Kc.
XL683 .... +6 Kc. to 50 Kc.
XL681 .... +50 Kc. to 150 Kc.
XL682 .... +150 Kc. to 525 Kc.
XL688 .... 1 Mc. to 20 Mc.
XL690 .... +20 Mc. to 60 Mc.
XL691 .... +60 Mc. to 100 Mc.



PYE XL683 Oscillator
shown actual size

These oscillators are of robust construction (using printed circuit board technique), reliable and of low cost.

The photograph shows the PYE XL683 as an example. Mounting is by the four holes in corners of the board. Alternately, if a "plug-in type" is required, an in-line socket can be supplied as an optional extra.

SPECIFICATIONS

A typical example of the series is the XL688. These figures are general, closer tolerances can be obtained.

Frequency Range	1 Mc. to 20 Mc.
Supply Voltage	12 Volts D.C.
Current Drain	15 mA. maximum.
Output	1 Volt p. to p. min. into 1K ohms.
Frequency Accuracy	±0.001% (set at factory).
Freq. Temp. Stability	
(Range 0°C. to +60°C.)	±0.005% from 1 Mc. to 2 Mc.
	±0.003% from +2 Mc. to 20 Mc.
Dimensions	2" x 2.5" (5.08 x 6.35 cms.).

These oscillators are supplied complete with crystal and accurately adjusted to a specified frequency. Write for full details, without obligation, stating frequency and mounting.

Send for our new—
"QUARTZ CRYSTAL UNITS"
illustrated catalogue
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HOBART	141 Murray Street, Hobart, Tas., 7000	3-3707
CANBERRA	P.O. Box 766, Canberra, A.C.T., 2600	49-6677

TOWNSVILLE AND DISTRICT

Once again the R.D. Contest has come and gone. It seemed quite exciting, this time I thought as I heard quite a few newcomers trying for the highest point rating. One chap from the Antarctic regions seemed to be about the highest I heard as his X factor was quite high for his QSOs. If the boys in New Guinea run true to form, they should give the other States quite a run for their money. Quite a few sounded hoarse as I heard them on the Sunday morning exchanging numbers. The various bands seemed to come in for a bit of QRM as each tried to work on the same frequency. Another few did not seem to keep a good check of the chaps worked and seemed surprised when the station called and informed them that they had exchanged numbers previously for that band.

Even though the bands seemed favourable at that period I now notice that the conditions have changed somewhat as the skip has altered. Very few stations being heard after tea. Maybe quite a few are resting on their laurels of the Contest.

Merv 4DV has been transferred out to where the crows fly backward, etc. His signal now being heard from Richmond, approx. 300 miles west of our city of Townsville. Eric 4HN will soon be transferred to Proserpine from Darra, so hope we can hook up once again Eric if not on the twisted pair. No news to hand as yet of the various schools who seemed in the South Scheme. 73, Bob 4RW.

BUNDABERG AMATEUR RADIO CLUB

Another month gone and it seems that we have achieved quite a lot this last few weeks —most of it behind the scenes. Our time has mainly been taken up with the conversion of all the Pye Mk. 3s, about 10 of them. Some are going and some are not, but probably by next month the 6 mx QRM will be at an all high level.

On the subject of 6 mx, quite a gang of our younger members spent Sunday, 27th Aug., on a mountain climbing expedition up Mt. Colosseum, about 80 miles north of Bundy. They originally planned to climb to the top —1600 ft.—and set up a 6 mx station and be on the air by 10.30 a.m. However, at 1.30 p.m. they set up the station at 800 ft. The lads carried a 60 ft. collapsible tower, batteries and a transceiver through miles of lantana covered mountain side and assure me they did well to get half way up by lunch time. Their efforts were rewarded by the exchange of 5-7 signals with Elliott Heads, 10 miles S.E. of Bundaberg. Just a warm-up for the big Queensland V.h.f. Field Day that was to be held on 17th September.

Jeff Bonny, our newest call sign, is well away on h.f. and v.h.f. Congratulations Jeff from all your mates. Jeff, who is running s.s.b. on the h.f. bands with a home-brew transistorised transceiver putting out a very nice clean signal, had the rather unfortunate experience a few days ago of being given the royal order, or dirty big wipe off, when he called into a well known early morning VK4 hook-up. He was told in no uncertain terms that s.s.b. signals were not wanted in the hook-up. Some of the remarks heard were: "I wouldn't even bother to switch the b.f.o. on" — "Oh it's that new call sign from Bundy, only been on the air a few days, don't worry about him" — "The cheek of this chap to break into a a.m. hook-up with duck talk."

Now, fair go chaps! Perhaps he should have known better, but youthful enthusiasm is really a marvellous thing to behold and you, with your years of experience behind you, could at least have been polite.

During the month Arch 4IL got going on the h.f. bands at long last. Nice to hear you active Arch. See you on 6 mx soon. 73, Rusty 4JM.

OBITUARY

JACK WORTH, Ex-VK4CW

Jack held the call sign VK4CW from 1948 and was very active for a number of years. He took a keen interest at this time in the Bundaberg Amateur Radio Club. However, after some years other interests occupied his time and he relinquished his call.

For some time now he has been living in retirement and has not enjoyed the best of health.

To his wife and daughter we extend our deepest sympathy.

SOUTH AUSTRALIA

The monthly general meeting of the VK5 Division for August was held to a capacity gathering of members and visitors, so much so that extra chairs had to be brought in to enable everybody to be seated in comfort. The meeting opened a little on the late side, but with very little business, Divisional or Federal, the time was soon picked up and the meeting soon settled back for the display of members' gear, and to add variety to this annual event, a display of some commercial equipment as well. The pieces of equipment displayed by members were many and varied, some fifteen pieces in all, and the one thing most noticeable was that at times it was difficult to sort out the commercial gear from the amateur gear, which is sufficient praise in itself.

In order of presentation, Gilbert 5GX had a fully transistorised s.s.b. transceiver; Murray 5ZQ a transistor power supply; Graham 5ZJL a 53.6 Mc. transistered transmitter; Les 5NJ a s.s.b. transceiver kitset which he had brought back from the U.S.A.; Bob 5ZDX a mobile 6 and 2 mx transmitter and converters; Bob 5PU a gimmick, which after a lot of technical ballyhoo and drawings on the blackboard, turned out to be a transistorised oscillator for code practice, a real leg puller this one; Peter 5ZKA a 6 mx receiver using FETs in conjunction with a Command receiver, a 2 mx converter also using FETs, and an amateur band receiver using FETs, not quite completed; Shep 5DC a Collins KWM2 transceiver; Jim 5ZSJ, the Moorabbin Radio Club transistor receiver; Eric 5ZEJ with a noise blanker using FETs, and two very old time receivers of about 1924 vintage which he had reconditioned like vintage cars; Leith 5LG, his first transmitter which he had recently discovered in the roof of his QTH during a clean-up; Goldy 5HF a Swan transceiver; John 5NX a capacitance meter; Joe Vardon, who was treasurer of the VK5 Division around the 1920s, brought along a Jap. 11 wave band transistor receiver; Ian 5ZIP had a power amplifier and a GR modulation monitor; Trevor 5ZTM had a 4-track stereo tape recorder that he had put a lot of work into; and to wind up the proceedings, Ron 5KS brought along several examples of his book-binding of the magazine into 12 monthly copies. Altogether an imposing array of equipment, and when one considers that each exhibitor also gave a run down on the merits of the equipment displayed, it was no wonder that the meeting did not close until 11 p.m. and I think I can safely say that not one member of the audience left the room until the meeting closed, which is sufficient indication of the entertainment provided and the success of the evening.

The three awards for the display of members' home constructed gear went to Gilbert 5GX, Graham 5ZJL and John 5NX, and to all the exhibitors goes the thanks of members present for such an enjoyable evening.

Could not but help notice when the pieces of equipment were being described by their owners, just how often they said that the various bits and pieces were given to them, or they scrounged them, etc., etc. I must have been a little unlucky in my time, because nobody ever gave me anything, probably this giving business is another variation of the well known often heard statement, "well filled junk box", another thing I never seem to have bumped into.

Heard on the W.I.A. broadcast that Frank 5MZ and Les 5NJ were seen at the ballet—or something—did not find out whether they were performers or only spectators, but looking in my crystal ball, I will hazard that Frank was there because his daughter is an instructress, and Les was there because his daughter was a performer. I hope that I am right, because what a pair they would make as performers!

On the same morning I heard a slip of the tongue from Uncle Joe 5UJ, of Whyalla, who blandly said that "these tubes usually take about 200 amps," and then very hurriedly corrected the statement, no doubt to avoid any unpleasant enquiries from any direction. Apparently his two 807s in parallel were suffering from one bung lung—a well known Chinese complaint—but I hate to think just what they would have been suffering from at that current.

Another quad has appeared in the evening sky—although I don't know if three wise men reported it—but it belongs to our genial Federal Councillor—what a joke!—none other than Geoff 5TY. A band of willing (?) helpers made the job much easier, with Geoff cracking his Simon Legree type whip at appropriate moments. What a bully!!

Talking of quads, I believe that one will shortly appear at the QTH of Rex 5DO. I will have to put a stronger fuse in my receiving aerial if this rumour is true, because his signal at the moment almost melts the piece of 044 at present acting as a fuse. Have you warned them in VK3 yet, Rex?

I recently put an ad. in the VK5 Journal in an effort to dispose of the gear belonging to the late Jim 5JK and was more than impressed with the number of replies that I received, and also the distances they came from. Since then I have been told that Geoff 5TY advertised an article in the Journal, and received a telephone call some 2,000 miles away, just a week after he sold it. Plus the fact that Uncle Tom 5TL notified all readers of the Journal of the Institute's stock of technical literature, and soon put up the sold right out sign. As much as I dislike Ye Ed's, I cannot but pat Brian 5CA on the back for the hard work that he puts into his "baby", to say nothing of the efforts of the XYL Marlene. Such hard work deserves success.

Heard an unexpected caller-back on the W.I.A. broadcast the other Sunday, none other than Roy 5AC, the young looking old-timer. Have not heard him much on this frequency lately, but believe that he can be heard loud and long on 53.1 Mc., and often at that. He called in to see me the other afternoon and looks younger than ever.

The R.D. Contest seemed to bring out all and sundry on various bands, and some of the figures I heard being exchanged certainly showed how keen everybody could be for their State. Cec. 5BZ, of whom I have heard nothing for quite a long time, appeared to be in the thick of it, although from what I heard, he apparently was in a seditious mood, making no secret of the fact that he preferred c.w. to any other mode!

Gilbert 5GX apparently found time from his many disposal duties to make over 200 contacts and spent the night in bed at that. He is definitely a wise man in not believing in all night sittings, particularly when he can make a good score without it.

Someone commented on the fact that I still only get two points for contacting a VK6 on "The Thing" in the specimen log sheet in "A.R." This is of course only spite on the part of "Ye Ed", as my working any State on such a mode would be worth at least 20 points, to say nothing of the comment which would follow!

I am still a success, even though I could not fit in a talk on commercial radio to the Black Forest Methodist Men's Fellowship on the date set out, Uncle Tom 5TL still wants me to oblige, so I will be on deck in November. Tomatoes should be out of season by then, so all I will have to contend with will be possibly eggs, cigarette boxes and possibly a couple of dirty looks. I intend to take up the position of danger money with Nunky, but not with much hope, I fear.

Reg 3MZ is definitely one of my mob. I heard him giving out an imposing list of contacts that he had participated in that day and concluded with "don't knock a.m. after that". A stout fellow is our Reg, even if he owes allegiance to VK3 these days, always remember that he is an ex VK5, which probably accounts for him being such a stout fellow!

George 5CV, he of Thunderbird fame, heard calling a G on 14 Mc. the other late afternoon, and when contacted seemed to be having quite a deal of trouble in holding him. I could not even hear the G, so it would appear that the beam, plus George's equipment, was right on the ball.

Keith 5ZY is someone that I have not heard for quite a while. Tuning across 7 Mc. the other Sunday afternoon I heard him in QSO with Tom 2ZZ of Newcastle. Judging by the strength of Keith's signal, it is probably just as well I do not hear him often, as I certainly would not hear anything else around that frequency. Why don't you accept Tom's invitation to visit Newcastle Keith? Sounds like he would give you a good time. Nobody ever invites me to Newcastle, or anywhere else for that matter, all they do is to tell me where I can go to!

Heard Mac 5NG, indeed a stranger to me, have not heard him for years, in contact with Ron 5UW the other early evening on 7 Mc. Both stations were mobile, Mac at North Adelaide and Ron at Marion. As I was about in the middle of both I had a good chance to judge the strength of the signals and as far as I am concerned they broke about even. Nice to hear you Mac after all this time.

Listening up in the c.w. end of 7 Mc. the other early evening I bumped into a whacking signal belonging to 5LY, so much so, that I thought he was a newcomer to the district, probably just over the back fence. Checking up in the Call Book, I was amazed to find that he was at Bridgewater, which after all is a little bit further than over the back fence to me. He is a stranger to me, I don't even know his christian name, but the book says

that his initials are C. W., so it was fitting that he was on c.w. Anyway, with a signal like that he won't ever be a stranger to me again!

Listened into the usual sked between Athol 5LQ and Jack 5LN the other evening on 7 Mc., but did not stay very long with them, they were too active and energetic for me. Athol was up to his neck with weedkiller, getting ready for the tomatoes, and Jack was torn between painting and rushing out to frighten away several millions of "spoggies" —his calculation, not mine—who were booking their seats in his orange tree for the night. I was quite exhausted after a few minutes listening to such activity, and left them to it. Anyway, what is Athol doing growing tomatoes? Has he heard about my venture into the lecturing field? This will take some watching!

Warrant Officer Len Baker—Len 5OB, 5OC, to you—retired this month from the R.A.A.F. after 27 years' service, but his tradition of service will be carried on by his son John, who was recently commissioned as a technical officer. Len was honored with a parade of 24 City of Adelaide Squadron at Edinburgh Airfield on the Sunday of his retirement, and in recognition of his contribution to the R.A.A.F., Air Commodore N. P. Ford presented him with a certificate of merit for outstanding service. Len has served in Malaya, the United Kingdom and throughout Australia. We dips our lid, Len—never knew you were so famous—photo in the paper and all!

The "Chief Duck" in VK5—Phil 5NN to you —decided that he would construct a little gadget to make operation in the R.D. Contest a little easier, to wit, a combination headpiece and microphone which would leave his hands free for the clerical work involved. It turned out to be an outstanding success from all points of view, and as he rallied his army of duck talkers to the cause, he was indeed a proud man. However, pride cometh before a fall, when his young daughter brought him a cup of coffee at some point through the contest, he clean forgot his little gadget and swiftly put the cup to his lips, to which the microphone objected, and several parts of "Chief Duck's" abdomen received large chunks of hot coffee. Being on "The Thing," it was not possible to resolve just what exactly he said, although I am given to understand that no such words have as yet ever appeared in his s.s.b. column! You beaut!

Incidentally, I note with some suspicions, that he received, for the second year in succession, the same report of 88 from a certain female station in VK2. Thank the fates again that I am pure??!!

73, de 5PS—PanSy to you.

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WESTERN AUSTRALIA

Hi there customers! Well that was a contest that was, of course I refer to the R.D. It seemed to me that scores generally were somewhat higher than in other years, but perhaps we had better wait for the publication of results before sticking the old neck too far out. Was rather surprised to hear Kerry 6CA, operating mobile on 6 mx, swapping numbers. Then there was a well known member of the Division who was lucky enough to borrow some fairly high power sideband gear, complete with vox, etc., and prepared to do battle. Being a smart cookie he put in a bit of practice before the big day but ran into trouble with odd "birdies" in the receiver. Called for help from the owner who marched in armed with quite an assortment of test gear. One quick look and he burst out laughing (good sport that he was) because the problem was overcome with a simple twist of the wrist. It appears that the bewildered borrower was reading the v.f.o. dial incorrectly—clot! Boy, was my face red!

Heard that Bob 6KN was operative on 80 mx again recently. This was welcome news because a previous whisper indicated that he had been reclining in a hospital bed somewhere in Victoria.

Our Broadcast Officer, Bob 6RE, reports that the new 6WI transceiver is performing reasonably well, but tends to feedback with certain antenna conditions.

At the time of writing, school holidays are in full swing and many members are taking the opportunity to flit around the countryside. One such happy philanderer is Doug 6EP, who has shrugged off the cares of the workaday world to visit the "big smoke" and points of interest in the south west. With a bit of luck he might hook up with Noel 6MF who is also allegedly visiting much the same territory.

By a masterpiece of timing, Bob 6RE was able to squeeze in a bout of chicken pox, just prior to the holidays. I understand that he plans to do a bit more to his transistorised rig in the next couple of weeks.

Bob 6BT has been sprucing up the shack in preparation for a visit from the, you know who, and is also hopeful of working a bit of DX on 15 and 20 mx. Oh to be a "Chalkie" when holiday time is here.

John 6ZBY managed to escape from Kalgoorlie for a brief week-end visit, but found time to "pencil" for Bill 6WY for a couple of hours during R.D.

During a recent QSO with John W4DPI, he enquired as to the whereabouts of some of the "old-timers" like Skipper 6WS, Ron 6KW, Frank 6FL and Alan 6MO. By the way, what did happen to Ron?

Came across a strange voice the other night while casting my shrill note on 20 mx. It turned out to be Keith 6KE, putting in a re-appearance after an absence of some years. Operating a "black bird" too—hope you were able to iron out the "bugs" on 40 mx Keith and welcome back.

A report just to hand from one of my more reliable carrier pigeons suggests that Griff 6VG has entered the city limits from far off Geraldton—might even have an "eyeball" with him, with a bit of luck.

After beating a hasty retreat from the shack, I can hardly wait to get my hot little fingers to these keys. The reason for this undue haste is Bob 6BT, who has just appeared on 80 mx using "The Thing". What with a new receiver and all, he is really hitting the high spots.

Well, that wraps it up for the time being, 73, Ross 6DA.

— • • • —

TASMANIA

Poley 7CK will soon be moving QTH to a spot just north of Launceston. Although this seems like a gain of one for the Northern Zone, its numbers will stay the same, as Harry 7BR will be moving to the south to Glenorchy.

Congratulations to David, ex-7ZMD, on dropping the Z and now being active on h.f. as 7MD.

On 10th September a group of Launceston operators were going aeronautical mobile with equipment on both the 2 and 6 mx net frequencies. They were to be piloted by Norm 7ZRG and were to head towards Flinders Island, in the hope of working into VK3.

While talking about net frequencies, Jim 7JO has at last broadened his outlook and come onto 6 mx. We hope his outlook stays broad and we see him on 2 mx before long.

Just to finish up, this month's funny story: A VK7 worked a G3 recently on 20 mx. Both were using vox and both had their dogs in the shack. The VK7's dog decided to bark and started several volleys of barks flying to G-land and back again. No doubt they will be careful of using vox in future. Once bitten . . . 73, 7ZLP.

HAMADS

Minimum 50c for thirty words. Extra words, 2c each.

Advertisements under this heading will be accepted only from Amateurs and S.w.l's. The Publishers reserve the right to reject any advertising which, in their opinion, is of a commercial nature. **Copy** must be received at **P.O. Box 36, East Melbourne, Vic., 3002,** by **5th of the month** and **remittance must accompany** the advertisement.

FOR SALE: Creed 7B Page Teleprinter, good condition with service manuals, $90. Wanted: Tape Reperforator and Distributor, also Antenna Tower suitable for Beams. Williams, VK3IZ, Phone 437-1811 (Melb.).

FOR SALE: Galaxy V. Amateur Station. VOX and 100 Kc. Calibrator installed, 12 volt Galaxy supply and home-built 240VAC supply, Heath SB610 monitor, Gentec 500 watt 50 ohm dummy load, Galaxy remote VFO unit, mic, key, rotator, Quad antenna, etc., as a complete station. Sutherland, P.O. Box 405, Port Moresby, Papua.

FOR SALE: SSB Phasing Exciter, output 9 Mc., Aswell P/S Network, 4.5 Mc. Xtal, 17 x 8 inch chassis with punched holes for mixer, etc., $30. Geloso VFO 4/104 with valves, one slug missing, otherwise reasonable condition, $14. R. N. Ferguson, 23 Floral Ave. East, Mildura, Vic.

SELL: Amateur band Receiver with Geloso Front End, 80-10 m., professional appearance, matching 6 and 2 mx Converters, $100. Yaesu SSB Generator, Type F, never used, $40. ART13 AM/CW Transmitter, 2-18 Mc., 813 mod. by 811s, $60. New 4/250A, $5. VK3MT. Phone 277-8295 (Melb.).

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SELL: Extra heavy duty P.S. 240 VAC 2500 VDC 350 mA. output. Choke input. Relay switched and metered. $20 or exchange, such as small Com. or Ham Receiver, etc. VK4SS, 35 Whynot St., West End, Brisbane, Qld.

SELL: Hallicraftter HT37, 80-10 m. DSB, CW, SSB, complete with Dow Relay and Transformer. Good condition. VK4CK, 72 Canning St., Warwick, Qld., 4370.

SELL: Johnson Match Box, $70; two Command Tx, 7-9.1, $12 ea.; Command Tx, 4-5.3, $10; Command Rx, 150-550 kc., Q5er, $20 (all Command gear in first-class condition); Palec VTVM with RF probe, $30; Heath Q Multiplier, $10; Hallicrafter Rx S36, 28-144 Mc., $70; 14AVQ Hy-Gain Vertical, $30. Russell Bradshaw, VK3SX, Phone 82-2152 (Melb.).

SELL: Pye Reporter, converted 6 m. net, AC/DC operation, less xtals, $33. Low band FM Base Station, unconverted, complete P.S., Phones, Mike, etc., $33. HT PS 550 volt 250 mA., $19. IF Unit, 85 Kc., ideal Q5er, $16. VK3ZKA, 28 Fiander Ave., Syndal, Vic. Phone 232-7480.

SELL: Receiver, Hammerland HQ170; Transmitter, Heathkit Apache, 240v. to 110v. transformer tossed in. $300 the lot. Let me know between Oct. 1 and Oct. 15. VK4HI, 30 Jellicoe St., Toowoomba, Qld. Phone 25990, ask or Frank the Yank.

WANTED: Low loss 52 ohm Co-ax., must have low loss at 2 metres. Also 8 Mc. Xtals, type FT243 or similar, suitable for overtoning to 24 Mc. for 2 metre transmitter. Contact Howard, VK3ZVH, Phone 277-1207 after 6 p.m. 325 Waverley Road, Mt. Waverley, Vic.

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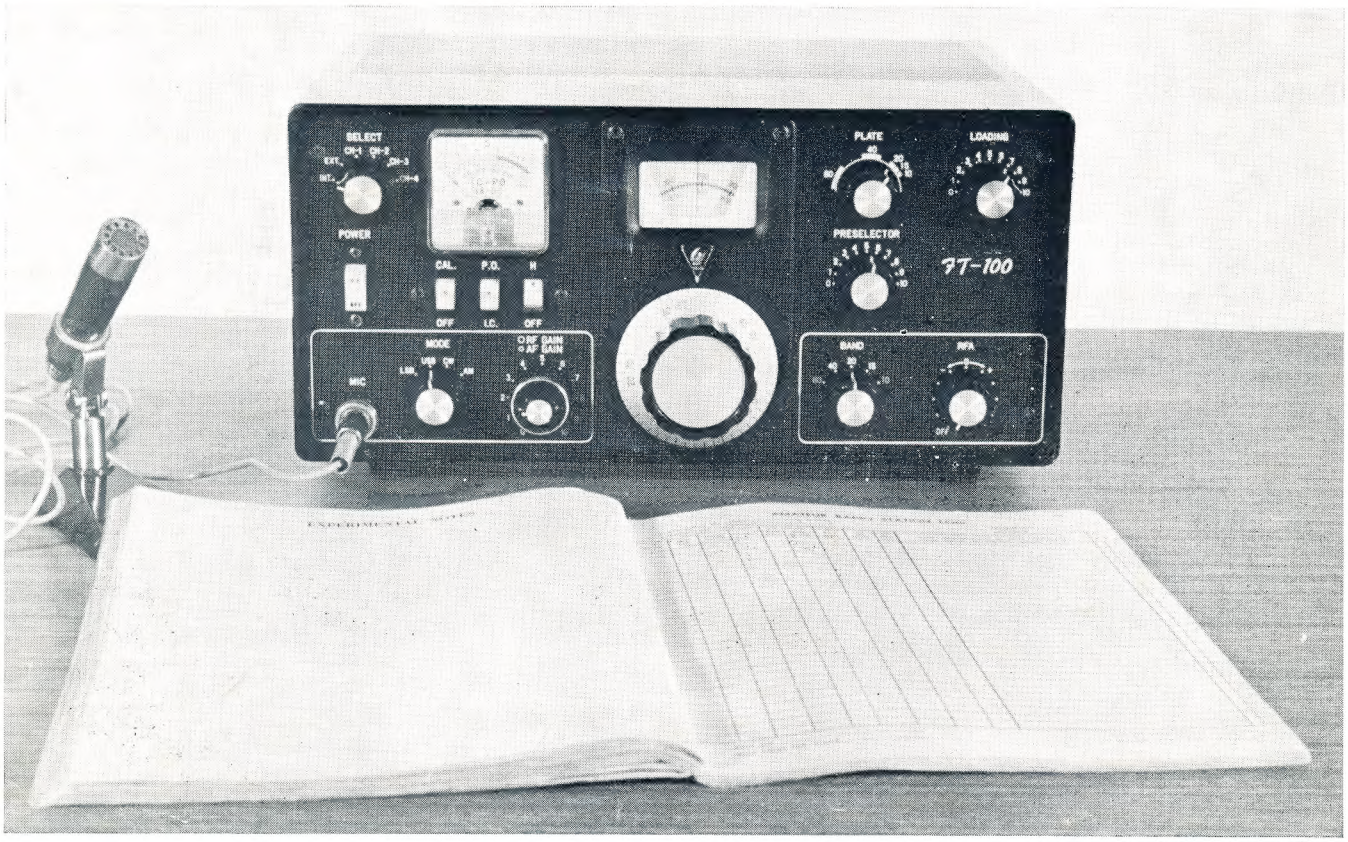

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